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The 1921 meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in New Orleans during Convention Week

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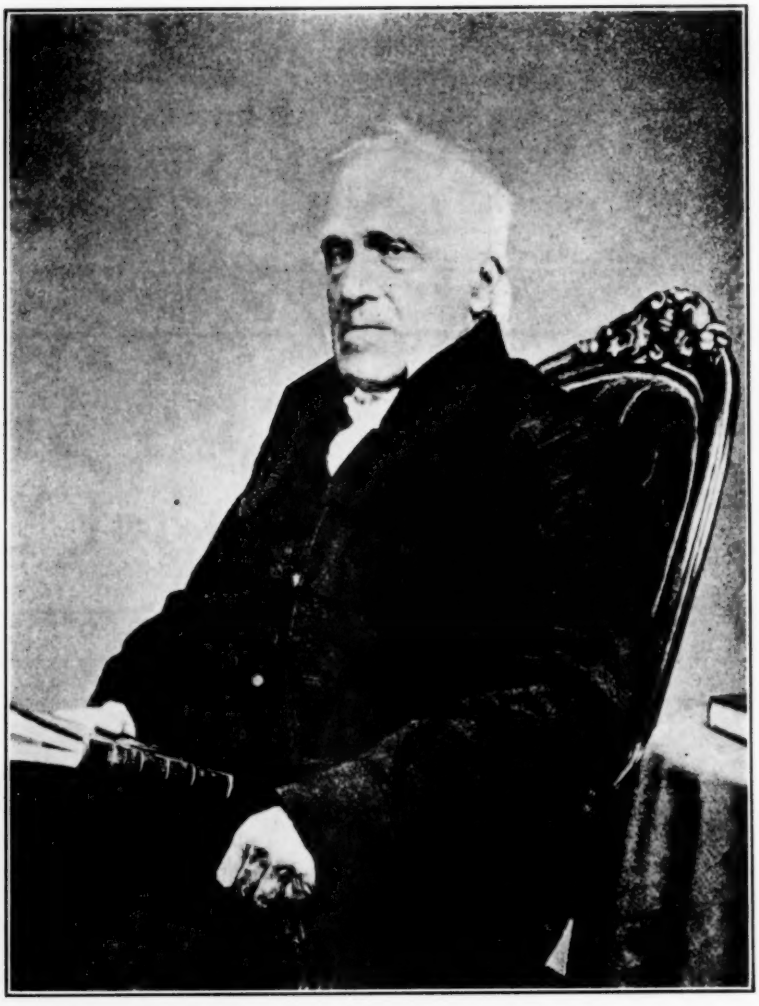
(1792-1883)

PHILADELPHIA, PA.

First President of the American Pharmaceutical Association, 1852-1853



Dan'l B. Smith

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. X MARCH 1921 NO. 3

DANIEL B. SMITH.

The first officers elected by the AMERICAN PHARMACEUTICAL ASSOCIATION were: Daniel B. Smith, of Philadelphia, as President; George W. Andrews, of Baltimore, Samuel M. Colcord, of Boston, and C. Augustus Smith, of Cincinnati, Vice-Presidents; George D. Coggeshall, of New York, Recording Secretary; and William Procter, Jr., of Philadelphia, Corresponding Secretary. All of the officers chosen were active in the organization of the schools of pharmacy in the cities named. A history of their lives is part of that of the earlier schools; they had vision, their interests were concerned with uplifting and upbuilding; all were possessed with the desire to advance the standards of pharmacy, and serve their respective communities, not only in their chosen profession, but in the performance of other duties, as citizens. The history of the states in which they resided is incomplete without records of their lives, and the PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION give an account of their activities in the Association.

Reference is made to Samuel M. Colcord in an article of this issue of the JOURNAL by ex-President E. L. Patch, and a brief sketch of Daniel B. Smith is prompted by the celebration on February 23d of the Philadelphia College of Pharmacy, of which he was the first secretary, and as he was the first president of the American Pharmaceutical Association about thirty years thereafter, his name is closely linked with that of early American pharmacy. Although nearly thirty years old when the institution referred to was founded, and he had reached three score at the time of the organization of the American Pharmaceutical Association, he gave them, in reverse order, the number of years of service represented by his age, for the College had passed the sixty-year mark, and the Association that of thirty, when this veteran pharmacist passed away March 29, 1883, aged ninety. It is a matter worthy of note that the records of both organizations are complete from the dates of their beginnings; in fact, as part of the centennial ceremonies in Carpenter's Hall, the transactions of several of the first meetings were read from the old minute books; there were also present descendants of the founders.

Daniel B. Smith, the son of Benjamin and Deborah (Morris) Smith, was born in Philadelphia July 14, 1792. He received his early education at the school of John Griscom, Burlington, N. J., who, it is said, was the first teacher to include chemistry in the curriculum of common schools in New Jersey. His apprenticeship was served in the store of John Biddle, Philadelphia, and after the conclusion of these years he became a partner in the business. In 1819 he opened a pharmacy on his own account at 6th and Arch Streets, which later, after various

changes, was purchased by two apprentices, Charles Bullock and Edmund A. Crenshaw.

As an index of Daniel Smith's turn of mind, we find him interested in extending opportunities for self-culture in the founding of the Apprentices' Library in 1820; a year later by his activities in the organization of the "College of Apothecaries." He was one of the incorporators of the Philadelphia Savings Fund and a corporator of "The House of Refuge." He became a member of the Franklin Institute at the first meeting after its organization; was one of the inaugurators of the Historical Society of Pennsylvania, and its first corresponding secretary; a member of the American Philosophical Society, and of the Academy of Natural Sciences.

For twelve years, 1834–1846, the subject of this sketch held the chair of Moral Philosophy, English Literature and Chemistry in Haverford College, during which period he wrote "The Principles of Chemistry," a textbook that went through two revisions. He was the first editor of the "forerunner" of the *American Journal of Pharmacy*, and a contributor to the first edition of the United States Dispensatory. Daniel B. Smith was secretary of the Philadelphia College of Pharmacy for seven years, and for twenty-five years its president. As already stated, he was the first president of the American Pharmaceutical Association and elected an honorary member in 1856. E. G. E.

COURT OF THE "TWO SISTERS," NEW ORLEANS, LA.

This quaint courtyard is only one of the many, many scenes in the so-called "French Quarter" of old New Orleans to which the glamor of an interesting past still clings. It is in the rear of a house once occupied by two sisters, whose pride in the old courtyard amounted almost to

obsession. The entrance from the street is through a long alleyway, which runs the entire length of the house. The building at the left which adjoins the main residence at right angles was set aside as quarters for negro slaves.

The American Pharmaceutical Association will meet in New Orleans during the week of September 5, 1921.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

AN INTERNATIONAL BIBLIOGRAPHY OF PHARMACEUTICAL LITERATURE.

TEOFIL LUGENDHOLD, of Lodz, Poland, recommends for the adoption by the Eleventh International Congress of Pharmacy the preparation of a bibliography of pharmaceutical literature. If, after consideration by the Congress, such an undertaking seems feasible and advisable, it is reasonable to assume that American pharmacists will give the proposition consideration. The thought is not new, except, perhaps, in so far as stress is laid on an international work in a number of languages.

After the appearance of the first British Year Book, the *Chemist and Druggist* of February 13, 1871, commented as follows:

"The first issue of this newly born annual, emanating from such an important body as the British Pharmaceutical Conference, is an event of too much interest to be allowed to pass with the few words which we were able to give to it last month. It is to be the first of a series which, in a pharmaceutical sense, is intended to preserve the story of our lives from year to year."

Editor Ince writes in the preface of this volume:

"It has become an impossible task for each individual to follow the progress of our art, even as it exists among ourselves, as journals of all descriptions, reflecting every shade of interest, crowd upon his notice thick as the leaves in Vallombrosa. Still less can he hope, trusting to his personal resources, to have a moderate acquaintance with the thought and experience of those who both think and feel exactly like ourselves, *but who speak in languages different from our own.* It has been the earnest wish of the British Pharmaceutical Conference *to link together,* with some degree of systematic arrangement, various ideas, *French, German, American and English,* bearing on our 'common mistress, Pharmacy.'"
(Italics ours—Editor.)

We are taking the liberty of quoting from a letter from the Reporter on the Progress of Pharmacy, H. V. Arny, to whom a copy of Mr. Lugendhold's preliminary prospectus was submitted:

"The present Bibliography of Pharmaceutical Research as it appears month by month in our JOURNAL is an attempt to cover the matter as far as current journals are concerned. When it comes to American pharmacy of the past fifty years (and quite a bit of European pharmacy, too) the PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION and (since 1912) its Year Books cover the field quite acceptably. And as to work prior to that time, and bibliographies in such books as Tschirch's 'Pharmakognozie,' alkaloids, Gildemeister and Hoffmann's 'Aetherische Oele,' to cite merely a few of many classic works of this character, will serve as an acceptable basis for the vast investigation suggested by Mr. Lugendhold.

"Turning to the details of Mr. Lugendhold's proposition, we are at first confronted by the ever-present problem of finances; for such a work in its entirety will require a vast amount of clerical assistance. As cited above, I believe that the first aim should be to assemble existing bibliographies. Thus, my study of Professor Tschirch's monumental work leaves me with the impression that he has covered the field of past pharmacognosy as thoroughly as any man could do it.

But the mere mechanical assembling of the available material in one language would be a vast task and it would seem obvious if the plan of a bibliography of world-wide use is to obtain, such a bibliography should be prepared in at least three languages and perhaps in six.

"The first thing to do would be to secure pledges of subscriptions from college, private and industrial libraries throughout the world and thus see whether the demand for such a universal bibliography is sufficient to justify the undertaking of the great task."

We have in this country the Lloyd Library, quite a number of libraries in manufacturing establishments, in colleges, etc.; a comprehensive index to relevant subjects therein is sufficient to indicate what such an undertaking means. The proposal may develop a serviceable plan, but not as comprehensive as the one suggested by Mr. Lugendhold. E. G. E.

ACQUAINTANCE WITH OTHER PEOPLE ESSENTIAL FOR PROGRESS.

THE world war shattered many ideals and precedents, but the fact remains that friendship among nations is essential for the world's progress. Our country is an example, a nation in which there is a blending of many nationalities, who in one way or another contributed to its greatness. Expansion of our commerce, growth of our industries, development of the arts and sciences, all depend to some extent on our relation with the people of other countries.

The bringing together of students representing fifty-seven nationalities in Philadelphia February 16th has a deep significance. The affair was arranged by the Chamber of Commerce and while, primarily, a get-together meeting with merchants, manufacturers, and financiers, the possibilities in bringing together votaries in every line of endeavor are apparent; in other words, opportunities are presented for extending knowledge relative to science and art, and the resources of other countries. The United States Ambassador to Japan presided as toastmaster, and among the student speakers were Bertram Adams, South Africa; Milosh Smeyanovitch, Serbia; Francisco Rivas, Chile; Chun Chen, China; and Tatsunosuke Ueda, Japan.

From significant statements in the addresses of several American speakers we quote the following:

"Plant your ideas and ideals in the hearts of others." "Take back to your lands the warp, woof and genius of America." "The spirit of a blending of the races finds an echo to-night in your being here." "While here don't be misled by travesties that undermine governments; there is only one worthy "ism' and that is patriotism. Take back with you your loyalty to your own country." "Friendship among nations demands as its essential requisite mutual understanding, and this means interchange of thought between the peoples."

Glowing accounts no doubt will go to Europe, Asia, Africa, Canada, Mexico, Central and South America, etc., in the letters these students will write home. Many of our colleges and schools of pharmacy educate foreign students; it seems

that some coöperative endeavor could be outlined of mutual value and of service to the world. While many countries are represented in the membership of the American Pharmaceutical Association, more of the foreign students should become affiliated with the organization. We know what such education meant to a country that threw away, or at least lost, its opportunities. The words spoken at the banquet referred to are indicative of American ideals; science and art are developed along related lines. What Blackstone said may find direct or indirect application: "The sciences are of a sociable disposition, and flourish best in the neighborhood of each other; nor is there any branch of learning but may be helped and improved by assistance drawn from other arts." E. G. E.

RESPONSIBILITIES OF TECHNICAL MEN AND OBLIGATIONS OF THE PEOPLE.*

BY WARREN G. HARDING, President of the United States.

No one can be more appreciative than myself of the great advantages of a college education. I took my post-graduate course in the university of country journalism. This appreciation of the value of college education, and of the value of college-trained men in a democracy, has deepened with maturity and experience in public service.

Our civilization is an industrial civilization. Its problems primarily are those of production and distribution, which, to be solved from the standpoint of the maximum welfare of all our people, must find their answer in an ever-greater volume of cheaper goods of higher quality; otherwise, a progressive standard of living cannot be maintained, and the law of life, which is growth, hence, will be thwarted.

The solution of these problems is, in the aggregate, a tremendous responsibility which rests directly with technically educated men who are trained primarily for this work.

It is not too much to say that the future of society to-day is in the hands of technically educated men, for they are concerned directly with the operation and management of the material forces which radiate their influence into every avenue of human thought and aspiration.

The rapid progress we have made in the fundamental, material things of life, is the result of the study and work of men of this type, and reflects the value to society of specialized ability, for in no other way than by specialization of effort could such great contributions be made to the common welfare.

The same specialization whose results in the aggregate are so valuable to society has its drawbacks which, in so far as the individual practitioners of the great technical professions are concerned, tend to confine their respective interests to their immediate work to the sacrifice of activity in the broader field of public affairs.

Government increasingly is becoming more technical, because its great problems more than ever before are essentially technical problems, particularly as they relate to internal affairs of development and more efficient utilization of our natural resources, which in many things are dangerously approaching exhaustion. Not only must these be conserved, but substitutes must be found and developed.

* *Chemical Age*, September 1920.

This work is the duty of men best qualified to do it. These men are the technically educated men, who form the industrial "shock troops" of the army of civilization. They are civil engineers, mechanical engineers, electrical engineers, mining engineers and metallurgists, chemical engineers and chemists, and, lastly, that body of faithful men who constitute a condition precedent to all the rest, the teachers of technical men.

Government is looking more and more to these men for the great public service of development and more efficient utilization of our material resources.

The conditions of our time demand that technical men shall concern themselves with public affairs and reflect upon their respective professions the popular recognition accorded to members of the legal and medical professions and the ministry.

Representatives of the engineering professions should sit in our state and national legislative bodies, instead of being merely the administrative agents of the great engineering projects that our intensive civilization now demands shall have greater fruition.

Our government maintains great scientific agencies in the Patent Office, Bureau of Mines, Bureau of Standards, the Geological Survey and the Bureau of Chemistry and Experiment Stations of the Department of Agriculture. Here engineers and chemists and representatives of every department of applied science are employed under capable scientific administrators, to encourage the development of our natural resources, to discover new processes for their utilization, and to protect the inventive mind in the fruits of its prolific genius to which we are indebted more than to any other one source for the material greatness of our country.

These agencies must be supported liberally, for their work is as seed which yield their harvest in the increased fruitfulness of all human endeavor in field, mine and factory.

Not only must these agencies have adequate appropriation from our national and state treasuries to solve the problems demanding solution with increasing insistence but the scientific workers therein must have a wage that not only represents a balancing of the changed economic conditions, and which to a greater degree than at present will permit government to compete with private industry for their services, but which will encourage the development of a type of scientific investigators qualified to cope with the exacting demands of research, without which industrial progress will stagnate.

Team work finds its highest exemplification in the successful manufacturing organization. He who gives the most receives the most. The rewards of competitive industry do not go by favor but by capacity.

We want in government the methods of industry, and we should avail ourselves to a greater degree than ever before of the wisdom of men who have made American industry one of the wonders of the modern world.

The great technical professions form the cornerstone of material civilization. Their practitioners are derelict to their greater social responsibilities in their indifference to political affairs.

I want to encourage that interest and will help to reward the effort.

As one who appreciates the value of their work and worth, I pledge myself to aid our technical men in all matters looking to the popular recognition of their respective professions.

THE NEED FOR AN INTERNATIONAL BIBLIOGRAPHY OF PHARMACEUTICAL LITERATURE.*

BY TEOFIL LUGENDHOLD, LODZ, POLAND.

The importance of a bibliography in all branches of science and literature is generally recognized, making extended comment thereon unnecessary. This being admitted, the value of a reference to pharmaceutical subjects is apparent, and in some countries, in Hungary for example, such bibliographies have been prepared.

I, therefore, embrace the opportunity of the meeting of the Eleventh International Congress of Pharmacy to direct the attention of my colleagues, that the preparation of a general bibliography in the present status of civilization and sciences is timely. Thereby the foundation would be laid for a monumental treasury of information, from which source we would become more cognizant of the wealth of the literature of the past and present. No argument is needed to impress that such establishment would develop a great interest and bring professional men of all nations into closer relation.

Assuming that my humble expression merits your attention and valued interest, and without going into the details of the plans, which are not without great difficulties, I venture to present the practical side of the proposition as relating to pharmaceutical bibliography. A general outline is embodied in the following:

I. History of Pharmacy.
II. Sciences underlying Pharmacy.
  1. Chemistry.
  2. Botany.
  3. Zoology.
  4. Pharmacognosy.
  5. Pharmaceutical Technic.
  6. Miscellaneous (Apparatus, Fixtures, Bookkeeping, etc.).
III. Encyclopedias, Dictionaries, etc.
IV. Publications.
  1. Those published regularly.
  2. Those appearing occasionally.
V. Calendars, Catalogs, etc.
VI. Pharmaceutical Organizations.
  1. Constitution.
  2. Protocols.
  3. Resolutions, References, etc.
  4. Exhibitions.
  5. Congresses.
VII. Pharmacopoeias, Formularies, etc.
VIII. Taxes, Duties, etc.
IX. Laws.
X. Pharmaceutical Development, Schools, Colleges, Institutes, etc.
XI. Miscellaneous.

Aside from this it is desirable to translate the titles into the French, German, English or Esperanto, together with references to the source of information, libraries, publications, etc.

In the collaboration of the bibliography the following would participate: associations, societies, libraries, technical schools, museums, institutes, etc., and individuals, under the direction of committees appointed in the interest of the work.

I, therefore, respectfully urge that the officials of the Eleventh International Pharmaceutical Congress create a special committee for promoting the work of an International Pharmaceutical Bibliography.

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* A Report to the Eleventh International Congress of Pharmacy, and contributed to the JOURNAL A. PH. A., by the author. Free translation by the editor.

PHYTOCHEMICAL NOTES.*

No. 86. A Comparison of Eastern and Western Hemlock Oils.

BY DONALD E. CABLE.

The needle oil of *Abies canadensis* L. was first investigated by Bertram and Walbaum[1] in Germany, where it is known more commonly as *Canadisches Tannenoel* (spruce oil), in the year 1893. They gave as the characteristics of this oil the following: specific gravity, 0.907; optical rotation, —20° 54′ in a 100 mm. tube; bornyl acetate content, 36 p. c. This oil was said to yield a pinene nitrosochloride (m. p., 102° to 103°) and contained a sesquiterpene in its highest boiling fraction. Power[2] is of the opinion that the above-investigated oil was obtained from *Picea alba* Link (White Spruce) or *Picea nigra* Link (Black Spruce) and not from *Abies canadensis* Michx. (popularly known in America as "Hemlock Spruce") which he regards as the source of the commercial oil of hemlock. Camphene was detected in hemlock oil obtained from the needles of *Abies canadensis* Michaux in 1894 by Schimmel and Company.[3]

In the latter part of September 1894, Hunkel[4] collected a quantity of leaves and twigs of the tree hemlock, *Tsuga canadensis*, better known in pharmaceutical literature at that time as *Abies canadensis* Michaux, at the Dells of the Wisconsin River. The yield of oil from this material was said to be comparatively small. This oil possessed a yellowish color and had the characteristic odor of hemlock. Its physical properties were: specific gravity (of the dried oil), 0.9288 at 20°; specific angle of optical rotation, $[\alpha]_D$ 18.399° at 20° C. The ester content of this oil, calculated as bornyl acetate, was 51.5 p. c. and 52.0 p. c. Laevo pinene was shown to be present by the formation of the nitrolbenzylamine base of this compound with a melting point of 122° C. The above investigator concludes that this oil when distilled in September consists principally of about equal parts of 1-bornyl acetate and 1-pinene.

Schimmel and Company[5] in 1897 present the following information concerning "Hemlocktannen-Oel" (hemlock oil) from the needles of *Abies canadensis* L. = *Tsuga canadensis* Carriere: specific gravity, 0.911; specific optical rotation, —25° 22′ at 16° C.; bornyl acetate content, 38 p. c. This oil is reported as being soluble in one and more parts of 90 percent alcohol.

In 1905 Pancoast and Graham published[6] an interesting report on "Commercial Volatile Oils of the Conifers" which threw some light upon the commercial production of hemlock oil. In answer to a questionnaire which they sent to about ten oil dealers in Boston and New York asking whether those employed in gathering of coniferous needles took care to keep the hemlock, spruce and cedar needles, boughs and twigs separate, they received the reply that the leaves and small twigs of the three varieties, hemlock, spruce and cedar, are distilled separately for each variety of oil and are never mixed with the cones.

---

* From the laboratory of Edward Kremers.

[1] *Archiv. der Pharm.*, 231, p. 290.

[2] "Descriptive Catalogue of Essential Oils and Organic Preparations" (June 1894), p. 74.

[3] S. & Co.'s *Bericht*, Oct. 1894, p. 21.

[4] *Pharm. Rev.*, 14, 34, 1896.

[5] S. & Co.'s *Bericht*, Oct. 1897, p. 25.

[6] Proc. Pa. Pharm. Assoc., 28, p. 184.

This report contained a description of the still used by one distiller. The authors point out the fact that they have not found any oil of commerce that has complied with Hunkel's figures for that obtained from *Tsuga canadensis*. They mention that in the spring of 1904 a lot of authentic needles and twigs of the above variety with no admixture of other needles was procured which contained "no oil or not enough to examine." In the fall another lot of this material was secured which yielded but a rather scanty amount of light green colored oil with characteristic odor. This resulting oil upon examination possessed the following physical constants: specific gravity, 0.9665; optical rotation, —11° 31′, and was soluble in all proportions of 95 p. c. alcohol. The bornyl acetate content could not be taken as the amount of oil was so small.

The experimental results obtained by Pancoast and Graham in working with various commercial samples and the authentic one are summarized by them in the following table:

OIL OF HEMLOCK (*Tsuga canadensis*).

No. samples.	Sp. gr. 15° C.	Optical rotn.	Bornyl acet.	B. p.
7.....	0.882 to 0.9172	—11°30′ to —18°14′	24.7 to 27.24	155–205°
8.....	0.902 to 0.911	—23°24′ to —28°48′	29 to 41.3	160–225°
1.....	0.9665	—11°31′	....	....

Hanson and Babcock[1] in the year 1906 made two distillations of leaves and twigs from a large hemlock tree. The first gave a yield of 0.4 p. c. of oil which had a specific gravity of 0.9238 at 15° C., and the second gave a yield of 0.46 p. c. with a corresponding specific gravity of 0.9273 at 15° C. The change in the specific gravities of these oils, while still fresh, for 1° C. was 0.0010.

From the above review, it becomes apparent that the question of the physical and chemical constants of hemlock oil, not to dwell upon its chemical composition, is anything but settled. It seemed desirable, therefore, to subject the oil to a more thorough investigation. Moreover, the utilization of the waste hemlock bough as a precautionary measure against forest fires seemed to make it necessary to find extended use for this oil, if possible. Such may be anticipated in the production of borneol and camphor. The bornyl acetate of the oil can readily be saponified to borneol and sodium acetate. The former could be used as such or oxidized to camphor. The latter would have been welcome during the war period. A complete separation of the borneol from the pinene would not at all be necessary, for the latter, with the borneol impurity, could be used in the artificial production of camphor. The consideration of this problem suggested that the western hemlock be included in this investigation, since at present it might prove of greater economic significance than the eastern hemlock of which our forests have already been largely depleted. Because of this possible economic significance the geographical distribution of both hemlocks was taken into consideration.

For the material the writer is indebted to lumber companies, also the Forest Service.[2] In the first distillation a separation into stems, leaves, and cones had

[1] *Journ. Amer. Chem. Soc.*, 28, p. 1198.

[2] For a more detailed description of the material and its source, see Donald E. Cable, "Needle Oils of Eastern Hemlock and Western Hemlock." A thesis submitted for the degree of Master of Science, University of Wisconsin, 1920.

carefully been effected by handpicking and the materials thus differentiated distilled separately. Finding that the branches, or rather twigs, yielded no separable oil, the branches or twigs were thereafter distilled as received. After distillation it was a relatively easy matter to separate the needles from the twigs and compute their relative proportion.

EASTERN HEMLOCK.

Five lots of *Tsuga canadensis* from as many states were collected and distilled during the months of June, July and August: No. I from East Tawas, Michigan, in June 1920; No. II from Armstrong, Wisconsin, in July 1919; No. III from Coos Co., New Hampshire, in July 1920; No. IV from McFarland, Tennessee, in August 1920; and No. V from Harrisonburg, Virginia, in August 1920. The results of the distillations, also the physical and chemical constants, so far as determined, are herewith tabulated for convenient comparison.

Sample number.	I.	II.	III.	IV.	V.
Yield of oil from stripped leaves.	0.29 p. c.	0.35 p. c.	0.53 p. c.	0.52 p. c.	0.65 p. c.
Sp. gr. 20°/15°	0.9172	0.9234	0.9190	0.9020	0.9165
Ref. ind. $n_{D20°}$	1.4704	1.4691	1.4699	1.4694	1.4694
$[\alpha]_{D20°}$	—21.65	—14.80	—18.80	—16.14	—19.10
Acid number	0.55	0.70	0.67	0.33	0.37
Ester number	131.8	147.35	132.7	103.8	129.6
Ester number after acet.	139.6	171.94	144.7	113.5	139.5
Ester as bornyl acet.	46.13 p. c.	51.57 p. c.	46.45 p. c.	36.33 p. c.	45.36 p. c.
Borneol as ester	36.25 p. c.	40.52 p. c.	36.50 p. c.	28.55 p. c.	35.64 p. c.
Free alc. as borneol	2.16 p. c.	5.89 p. c.	3.33 p. c.	2.69 p. c.	2.74 p. c.
Total borneol	38.41 p. c.	47.41 p. c.	39.83 p. c.	31.24 p. c.	38.38 p. c.
Substances other than bornyl acetate and free borneol	51.71 p. c.	41.54 p. c.	50.22 p. c.	60.98 p. c.	51.90 p. c.

The data given in the above table show a very close similarity in properties of the oil of eastern hemlock obtained from leaves grown in rather widely separated localities in the region of this species. There are, however, very appreciable differences in yields of oil in the five cases. The real cause for these differences in values need not necessarily be ascribed to differences of locality. An adequate explanation would require a much more thorough investigation of involved relationships than has previously been undertaken.

The ester content of the oil from Armstrong, Wisconsin, is about five percent larger than that of three of the other oils, and fifteen percent larger than that from Tennessee; however, it is almost identical with the corresponding value obtained by Hunkel[4] for that secured from leaves grown near Kilbourn, Wisconsin. The free borneol content of the Armstrong oil is also decidedly larger than the corresponding value for each of the other four oils. These two factors are seen to give a total borneol content of the former which is 8 to 16 p.c. in excess of the amounts obtained in the cases of the other four oils.

WESTERN HEMLOCK.[1]

Three lots of material were obtained from the west, all from Coeur d'Alene, Idaho; No. I in May, No. II in June, and No. III in July 1920. The results of

[1] A map showing the distribution of *Tsuga heterophylla* will be found in ***Bull.*** 680, U. S. Dept. of Agriculture, Map. No. 4.

the distillations as well as the physical and chemical constants, so far as determined, are tabulated for convenient comparison.

Sample number.	I.	II.	III.
Yield of oil from stripped leaves	0.36 p. c.	0.32 p. c.	0.32 p. c.
Sp. gr. 20°/15°	0.8444	0.8521	0.8490
Ref. ind. $n_{D20°}$	1.4790	1.4840	1.4806
$[\alpha]_{D20°}$	—6.74°	—16.99°	—20.00°
Acid number	2.57	3.4	3.2
Ester number	17.25	17.2	6.7
Ester no. after acet	27.64	33.4	19.6
Ester as bornyl acet	6.04 p. c.	6.02 p. c.	2.35 p. c.
Borneol as ester	4.75 p. c.	4.73 p. c.	1.85 p. c.
Free alcohol as bornyl	3.87 p. c.	4.51 p. c.	3.58 p. c.
Total borneol	8.62 p. c.	9.24 p. c.	5.43 p. c.
Substances other than bornyl acetate and free borneol.	90.09 p. c.	89.74 p. c.	94.07 p. c.

The table reveals that there is no appreciable variation in the yield of oil for the three months over which the investigation was extended. This observation agrees with that of another investigator[1] of needle oils of western conifers who covered the longer period from May to November.

Attention should also be directed to the striking differences in the angle of rotation and the ester content. The latter in the case of western hemlock oil is seen to be much lower than that of eastern hemlock oil.

The amounts of oil obtained did not admit of a careful chemical study of these products. Preliminary fractional distillations,[2] however, have already revealed striking differences between the eastern and western oils. It is to be hoped that larger amounts of oil may some day become available for a thorough chemical study.

COMMERCIAL HEMLOCK OILS.

For the purpose of acquiring a better idea of the hemlock oils of commerce several samples were examined as to their physical and chemical constants, the results being herewith tabulated. All three samples were cabinet specimens. From their labels the following information may be gleaned: No. I Fritzsche Brothers, 1909; No. II Fritzsche Brothers, Sap. No. 109, ester content 38.15 p.c. (no date); No. III E. H. Sargent & Co., July 1919.

Sample number.	I.	II.	III.
Sp. gr. 20°/15°	0.9664	0.9190	0.9310
Ref. ind. $n_{D20°}$	1.4796	1.4721	1.4760
$[\alpha]_{D20°}$	—14.18	—24.85	—19.92
Acid number	18.45	3.59	1.51
Ester number	108.05	115.41	105.09
Ester no. after acet	....	150.83	149.51
Ester as bornyl acet	37.82 p. c.	40.39 p. c.	36.78 p. c.
Borneol as ester	29.71 p. c.	31.74 p. c.	28.91 p. c.
Free alcohol as borneol	....	10.00 p. c.	12.64 p. c.
Total borneol	....	41.74 p. c.	41.55 p. c.
Substances other than bornyl acetate and free borneol	....	49.61 p. c.	50.58 p. c.

The writer desires to thank the officers of the Forest Service also others who have kindly supplied the material that made this investigation possible.

[1] G. M. Hunt, "Steam Distillation of Needles, Twigs and Cones of Western Conifers," Dec. 29, 1913. Available in the files of the Forest Products Laboratory.

[2] See thesis for records.

SOME MICROCHEMICAL TESTS FOR BETA-EUCAINE.

BY C. H. STEPHENSON.

During the course of an investigation on microchemical tests for some of the alkaloids, the writer had occasion to test out solutions of Beta-Eucaine hydrochloride with more common alkaloidal reagents. It was found that five reagents gave crystalline precipitates with a 2 percent solution of Beta-Eucaine hydrochloride, these being Picric Acid, Sodium Salicylate, Platinum Chloride, Palladous Chloride and Mercuric Chloride.

Four aqueous solutions of Beta-Eucaine were used as follows: 1 : 50, 1 : 200, 1 : 500, and 1 : 1000.

Out of a list of some fifty reagents, used including all of the more common alkaloidal reagents, about twenty gave non-crystalline precipitates with Beta-Eucaine.

The reagents which gave crystalline precipitates were all 5 percent aqueous solutions with the exception of the Picric Acid, which was a saturated aqueous solution.

In making the tests described below one drop of the test solution is placed on a microscopic slide and a small drop of the reagent added by means of a glass rod.

PICRIC ACID.

This is the most sensitive of the reagents used as a slight precipitate is formed in the 1 : 1000 solution which crystallizes rather quickly into small rosettes. With the more concentrated solutions, the crystals are of the same general form as with the 1 : 1000 solution, but they are larger and naturally obtained in greater numbers (Fig. 1).

Fig. 1—Crystals Formed with Picric Acid (×100).

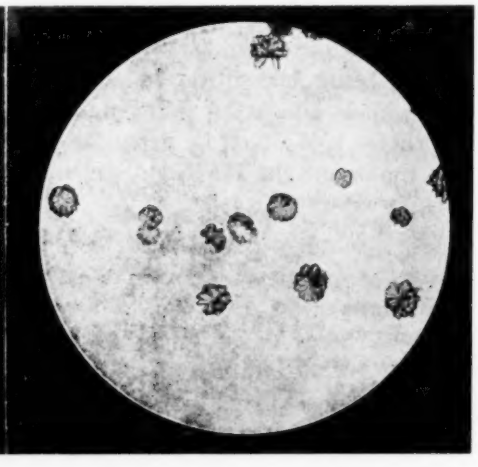

Fig. 2—Crystals Formed with Sodium Salicylate (×100).

SODIUM SALICYLATE.

No precipitate in the 1 : 1000 or the 1 : 500 solutions but upon stirring the latter with a glass rod, great numbers of small rods or rosettes of same are formed.

In the 1 : 1000 solution rosette crystals are quickly formed and these crystals are similar to those obtained from the heavy amorphous precipitate in the 1: 50 solution (Fig. 2).

PLATINUM CHLORIDE.

A precipitate from which crystal rosettes are slowly formed is found only in the 1 : 50 solution (Fig. 3).

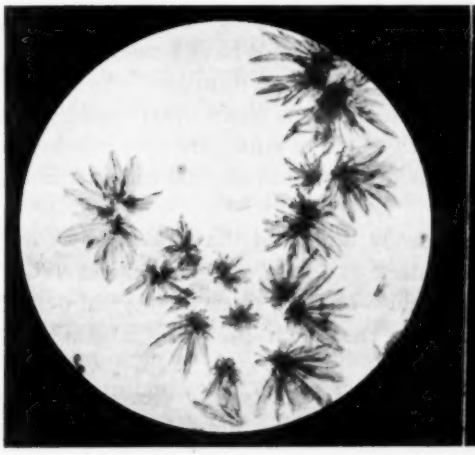

Fig. 3—Crystals Formed with Platinum Chloride (×75).

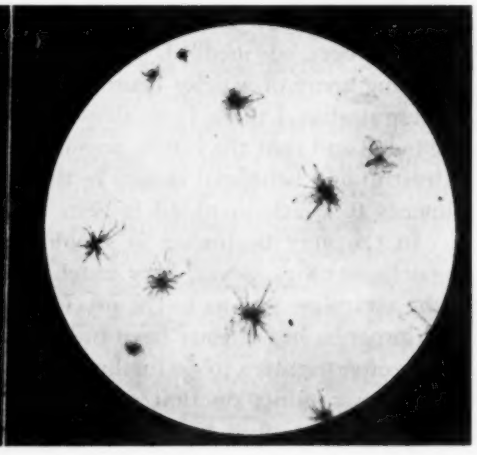

Fig. 4—Crystals Formed with Palladous Chloride (×150).

PALLADOUS CHLORIDE.

A non-crystalline precipitate is formed in the 1 : 200 and 1 : 500 solutions but not in the 1 : 1000 solution. In the 1 : 50 solution crystal rosettes grow slowly from the heavy precipitate first thrown down (Fig. 4).

MERCURIC CHLORIDE.

No precipitates in any but the 1: 50 solution. This latter crystallizes slowly into large rosettes. Stir the slide with a glass rod and the crystalline formation is then rapid (Fig. 5).

The five photographic reproductions herewith published are all from the reactions with the 1 : 50 solution of Beta-Eucaine hydrochloride.

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Fig. 5—Crystals Formed with Mercuric Chloride (×75).

THE PHYSIOLOGICAL VALUE OF THE VITAMINES.*

BY A. D. EMMETT, PH.D.

Pertinent questions as to what vitamines are, and how they act in the physiological economy have been and are now occupying the serious attention of many investigators throughout the scientific world. At first, when Funk[1] announced his vitamine deficiency theory, there was a great deal of skepticism on the part of many and especially among medical men who have been schooled essentially along the line that disease is fundamentally due to infection. In the last three years, however, our medical, biological and chemical journals have issued an almost unceasing array of articles bearing on subjects relating to vitamines. As a result of these studies, I think I can show you that this theory is based upon sound scientific facts, and that the future possibilities in this field of study are very suggestive of fruitful and beneficial results in the treatment of certain general malnutritional ailments to which mankind is heir.

In the very beginning, it should be frankly admitted that biochemists and physiologists are, as yet, very much in the dark as to the exact chemical nature of the vitamines and as to the precise definiteness of their pharmacological action. Such progress has already been made, however, that it has had the effect of stimulating investigators to do further work.

By way of introduction, a brief résumé of the early history of vitamines and a general description as to what they are will aid in a better understanding of their physiological value. It was Eykmann,[2] Grjins,[3] Schumann,[4] Chamberlain and Vedder,[5] and others, who were first impressed with the idea that the diet had a definite relation to a specific disease, beri-beri. It was found that when the oriental peoples consumed an overabundance of white or milled rice, they gradually acquired the symptoms of this disease, and that when they substituted unmilled or natural rice, the pathological condition was corrected. Fraser and Stanton[6] were able to cure beri-beri by using an extract of rice polish, and Funk[7] succeeded, in 1912, through his series of researches, in isolating a curative fraction from extracts of rice and brewers' yeast to which he gave the name vitamine.

Now we consider that there is more than the one vitamine, and designate the "vitamines" as one of the essential nutritive groups which must absolutely be present—along with the right amount of protein and mineral salt, and a sufficient amount of carbohydrates and fats for energy—to produce normal growth and development.

Due to the studies of Hopkins,[8] Osborne and Mendel,[9] McCollum and associates,[10] and others, we recognize two general types of vitamines—the water-soluble and the fat-soluble. The water-soluble group includes: (*a*) the original antineuritic vitamine of Funk; (*b*) the growth-promoting vitamine; (*c*) the yeast-stimulating vitamine; and (*d*) the antiscorbutic vitamine. Besides these there are some suggestions being put forth which tend to show that there are other water-soluble vitamines.

As to the fat-soluble vitamines, we have considered that there is, so far, but the one form—designated by McCollum as fat-soluble A. Mellanby[11] has thrown

* Read before the Detroit Branch of the American Pharmaceutical Association, May 21, 1920.

out the suggestion, though, that there may be another one, which relates to dental caries. Then, too, Myers and Voegtlin[12] have just shown that the water-soluble antineuritic vitamine, when separated out, is in turn soluble in certain oils.

It is thus easily seen that the researches directed toward a study of the chemical nature of the vitamines has been tremendously complicated by various factors. Thus, the biological and physiological evidence indicates that there are probably more than one or two. On the other hand it is possible that there may be a primary, or alpha or nuclear vitamine base or group and that the other vitamines are derivatives of it. Another supposition might be that this primary vitamine is susceptible to variations in the acid or alkaline menstruum of the different body fluids; and also that certain metabolic end-products may act as inhibitors.

Funk[13] considers that the antineuritic vitamine is possibly related to nicotinic acid, or adenine or some of the pyrimidines or purins. Williams[14] is of the opinion that this vitamine is a pseudo-betain and that it has tautomeric properties, that is, existing in both active and inactive forms, or in uncombined and combined forms.

This antineuritic vitamine is precipitated by such reagents as phosphotungstic acid, mercuric chloride, silver nitrate and picric acid. It is adsorbed by fuller's earth and mastic. It is stable in dilute acids, even on boiling; and is less stable in alkaline media. One thing stands out prominently in this work, namely, that this vitamine is very easily altered, and in the concentration and purification of it, like the active principle of many of the glands, it becomes less potent.

As to the isolation and chemical nature of the other water-soluble vitamines referred to, practically nothing has been accomplished. They have certain thermostable properties and are more or less affected by alkali. The antiscorbutic water-soluble vitamine is not adsorbed by fuller's earth, and is very easily destroyed or altered by heat.

The fat-soluble A vitamine is not a lipoid, does not contain phosphorus or nitrogen, is fairly stable to heat, and is considered by Steenbock and Boutwell[15] to be possibly associated in its chemical structure with carotin, the yellow pigment of butter oil. Other studies, particularly those of Palmer and Stephenson, indicate that there is little if any relationship in this connection.

Now, as to the physiological value of the vitamines, it has been shown experimentally that, in the absence of the antineuritic vitamine, fowl will come down with avian beri-beri. From the extensive work of McCarrison[16] on pigeons, the symptom complex of this disease is a gradual loss of appetite, a decline in weight, a lowering of the body temperature, a decrease in the red blood cells, a general derangement in the endocrine glandular functioning causing atrophy in some glands and hypertrophy in the adrenals, a partial or complete paralysis, and finally, if no treatment is administered, death.

Histological examination of the nerve tissues by the Marchi method shows a certain amount of degeneration and on this basis it has been stated repeatedly that a lack of this vitamine causes nerve degeneration. McCarrison and others are of the opinion that instead there is an accumulation of toxic substance, which inhibits the normal passage of the nerve impulses. Otherwise, it is difficult to explain the rapid recovery following treatment.

According to Funk,[17] there is a relation between the amount of carbohydrate and the absence of the vitamine in respect to the rate of hastening the onset of

the disease. He found that the sugar in the blood was increased by a lack of vitamine and that an excess of starch in the diet aggravated the condition still more.

McCarrison,[16] using monkeys, found that a diet that was low in vitamines and protein but high in fat or starches or both, brought about a condition which was very prone to cause disease, particularly of the gastro-intestinal type, and that this condition tended to greatly favor bacterial invasion of the blood and tissues. He also concluded that an *absence* of the water-soluble vitamines in the diet was of less value from the practical standpoint of disease than was a *subminimal* supply of the vitamine. For, in the first case, there results a rapid dissolution and death, especially if the other nutritive requirements are not met, while in the second case, there is a tardy dissolution with the concurrent appearance of disease in one form or another.

McCarrison says "The results recorded in this paper may afford some explanation of the genesis of that great mass of ill-defined gastro-intestinal disorders and vague ill health which forms so high a proportion of human ailments at the present day."

As to the water-soluble growth-promoting vitamine, Hopkins, in 1913, was the first to note that when all the supposed known dietary factors were present for normal growth, young rats grew for a time then ceased. Upon adding a minute quantity of raw milk—too small to contribute anything to the number of calories, or to the protein or mineral salts—the animal began to grow markedly. He associated this finding with Funk's vitamine deficiency theory and considered that here was another vitamine than the antineuritic—the growth-promoting factor. Osborne and Mendel,[9] as well as McCollum and associates,[10] and others have confirmed this. McCollum, however, takes the position that this vitamine is the same as the antineuritic while in our laboratories we[18] have introduced evidence which suggests that such a conclusion may be questioned, for the present at least.

In the absence of this second vitamine, the rat soon ceases to grow (measured by weight) and remains stationary. If there is an apparent *total* lack of this vitamine, then the animal declines in weight and later reaches a stage when it cannot control its movements and shows a positive loss of the power of locomotion due to partial paralysis of the posterior extremities. In our laboratories we have also made histological examination of a number of the tissues, including glands, of several rats that were suffering from a lack of this vitamine. There was found to be a general derangement in the digestive system as well as in the endocrine glands. The thymus, for example, was almost completely atrophied while the adrenals were enlarged. The livers also showed definite indications of fatty infiltration and in some cases even degeneration. This is suggestive of an altered carbohydrate metabolism.

If an extract containing this vitamine is introduced in the ration, or given to the rat subcutaneously or *per os*, there will result a rapid and quick response, and in due time a complete recovery in loss of weight with subsequent normal growth. Eddy and Roper[19] treated marasmus babies and were able to stimulate growth and normal recuperation. Daniels and Byfield[20] found that this water-soluble vitamine accelerated the metabolism in convalescent children.

Again, Uhlmann[21] in a series of tests with extracts containing the water-soluble vitamine found that the presence of vitamines in the extract bore a close relation

to the salivary, gastric, bilary and pancreatic secretion; that nerve action was stimulated and body tone regulated; that they caused vascular dilation, lowering of the blood pressure, and stimulated tonus and pendulum motion of the intestine.

Voegtlin and Myers[22] consider that the antineuritic vitamine acts in the same manner as secretin which stimulates the secretions of the pancreas and liver. There have been data put forth to refute this idea but it is still tenable. Dutcher[23] has presented the theory that this vitamine may increase the production of catalase and in turn aid in the oxidative processes. He also throws out the suggestion, which has been made previously, that vitamines are closely allied with the active principles of the endocrine glands. In this connection, it might be added that we[24] have shown the development of the tadpole, other essential factors being supplied, depends in part on the presence of the water-soluble vitamine.

The third water-soluble vitamine, which is designated by some as water-soluble C and by others as the antiscorbutic vitamine, has a definite and specific relation to scurvy. This vitamine, as has been mentioned, has two characteristic properties which distinguish it chemically or physically from the former two vitamines—namely, it is not adsorbed by fuller's earth and is extremely unstable to increasing temperature. Harden and Zilva[25] have shown that after neutralizing the acid and removing the salts formed, the filtrate contains the vitamine. This proves conclusively that the supposition that has been believed by many, namely, that the organic acids were the corrective agents in scurvy, is wrong. The lack of this vitamine is, therefore, the direct cause of scurvy. According to Zilva and Wells, and later Howe, the pulp of the tooth is very appreciably affected by a deficient antiscorbutic diet.

Hess[26] recognizes two types of scurvy, the subacute form which occurs during the first few months of infancy and the acute form which is more easily observed in children and adults by a looseness of the teeth, bleeding gum, etc. Pediatricians are agreed that much more care should be exercised in guarding against scurvy in the feeding of infants and that their food should be supplemented with some material as orange juice. Here, however, we are often met with cases where a baby's stomach is too sensitive to withstand the free acid, and special preparations should be employed.

The fourth water-soluble vitamine that we referred to relates to the stimulation of the growth of the yeast cell. Williams[27] and then Bachman[28] put forth evidence which showed clearly that extracts that contained the antineuritic and growth-promoting vitamines carried a stimulus, which, when the extract was added to a synthetic media (that would not support growth of the yeast), caused a marked accelerating effect on the yeast, either in the increased number of cells or the degree of fermentation. Williams considers this vitamine to be the same as the antineuritic. We have recently been able to demonstrate that the yeast-stimulating vitamine is apparently biologically independent of the antineuritic and the rat growth-promoting vitamines.

Besides these water-soluble vitamines, there appear to be others, or at any rate, other organisms seem to require vitamines for normal functioning. For example, certain fungi and certain bacteria need vitamines. Davis and I have done some preliminary work on the specific vitamine requirements of bacteria and the tentative data suggest that in this case the extracts that stimulated yeast growth had no effect while special ones were efficacious with the bacteria in question.

Having considered the water-soluble vitamines, let us turn our attention to the fat-soluble form—that is, "vitamines" that are soluble in fat. Osborne and Mendel,[9] and at about the same time, McCollum and associates,[10] working independently, discovered that young rats required for complete normal growth and normal functioning another member of this vitamine group and McCollum proposed the name fat-soluble A. Without this vitamine, all the other dietary essentials being present, rats grow for a while then growth ceases and there is a subsequent loss in weight. At the same time, an eye condition, xerophthalmia, develops, and complete blindness will eventually result unless the missing factor is supplied. The general condition of the animal is a syndrome of malnutrition. We have found that on this dietary plane, rats are very susceptible to lung infections—as pneumonia and bronchisepticus. This is in marked contrast to the animals fed a ration with the other vitamines missing and the fat-soluble A present, although an exception should be made in the case of the antiscorbutic vitamine. Guinea pigs are very prone to infections of the pneumonia type in this case.

Mellanby[11] and others associate the etiology of rickets with a deficiency of the fat-soluble vitamine. Along with this faulty diet one should also consider a possible depletion of the calcium and phosphorus salts. Mellanby also suggests the possible relation of a subminimal supply of fat-soluble vitamines in infancy to the later development of dental caries. Beside these, many are inclined to attribute pellagra as being due to a low supply of this vitamine along with a supply of a poor quality of protein and a deficiency of calcium salts.

In general, it may be said that *all* the known vitamines are needed for normal development and functioning. When one form is missing the clinical picture shows a pathological resultant effect of some sort. Thus, Stark[29] in clinical tests, and later McCollum and Simmonds in careful experimental studies on rats, showed very clearly that the vitamines have a definite relation to the development of the young during pregnancy and also during the period of lactation. McCollum concluded that if the food given the mother was lacking or deficient in one of the vitamines, the milk would be correspondingly affected. As a result the young would not develop normally. This is a very fundamental fact for if the infant is started on a faulty vitamine plane, especially if some of the other nutritional essentials are not properly balanced, the ultimate results will be serious, unless the diet is modified or there is added some supplemental agent containing the vitamines.

From what I have cited in this brief résumé and from the illustrations and charts, the evidence points with certainty to the undeniable fact that the so-called vitamines have a definite place in the physiologic economy. It appears that they act as powerful stimuli, regulating the metabolism so that a sluggish or retarded systemic cycle of physiologic reactions shall be brought more nearly into its proper rate of speed or motion. Whether this is a case of proenzymic action or not is only conjecture. Whether we have a direct quickening or accelerating action, or whether it is first a case of stimulating the removal of certain toxic metabolic end-products that have accumulated due to subminimal amount of vitamine, is not known.

While the vitamines are very important indeed, at the same time it should be borne thoroughly in mind that the proper balancing of the other nutritive essentials—proteins, carbohydrates, fats and mineral salts—are equally important.

There is a definite interdependence of these nutritive groups, which calls for the judgment of the trained medical man to determine how it should be varied.

Again, it should be borne in mind that in the large majority of cases, the studies that have been made in this field have been based upon the source of vitamines as they exist in extracts and not as isolated chemical bodies. Therefore, it may and probably will in some cases be shown in the future that some of these deductions will be found to be not as exact as they have been stated. Bear in mind, however, that these studies are pioneer, as it were, and that the majority of the investigators have gone and are going forward with open minds, thoroughly convinced that ultimately (perhaps in the near future) the vista will become clear and then we can talk with more exactness and more precision.

In the meantime, it seems only rational to advocate the therapeutic usage of the different vitamines in concentrated form—namely, the fat-soluble A (present in egg-yolk, fat, green leaves, etc.); the water-soluble B (present in yeast, rice polish, etc.); and the water-soluble C (present in orange juice, fresh tubers, etc.). I see no fundamental objection to this provided it is thoroughly understood that such concentrated vitamine products are intended to be used solely at the discretion of the physician who is in a position to diagnose the case and decide whether he is dealing with a type of malnutrition, the supplemental treatment of which will be assisted with vitamines.

Now I have intentionally avoided referring to the various sources of vitamines in raw materials, food and food products. This phase of the subject hardly comes within the scope of the topic before us. The two ideas should be kept distinctly separate for many reasons, but chiefly to us on the grounds that we are dealing with the treatment of a diseased condition and not preventative medicine. Also I have avoided discussing methods of extracting and isolating vitamines. Either of these phases of the subject would have occupied the entire time that has been placed at my disposal. Then, too, I have taken it for granted that at the present unsettled stage of vitamines you as pharmacists would be primarily interested in the physiologic value of vitamines so that thereby you would gain a general idea, at least, as to their complexity and be in a better position to coöperate with the physician in the rational usage of them.

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CLINICAL AND PATHOLOGICAL LABORATORIES.*

THEIR MAINTENANCE, SERVICE CHARGES AND SCOPE OF WORK.

BY HENRY J. GOECKEL.[1]

As clinical laboratory examinations, that is, the chemical, microscopical and biological examinations, are becoming of more value in the diagnosis and control of disease, the employment of such methods is increasing. With this increase many more laboratories are being established in hospitals, and as state, municipal and private institutions.

From an apology for a laboratory, such departments are becoming of paramount importance in hospital equipment. Many of the more recent institutions have set aside an entire building or unit of structure for this purpose. From an equipment for making a routine urine examination, and examining a few specimens and tissues microscopically, they are now equipped for far more extensive work. The time has come when no hospital can lay claim to recognition unless it has a well-equipped laboratory.

This being the case, it will be timely to discuss the various factors involved in, and their bearing on, the cost of such service. This is especially opportune, because many electing this branch as a vocation are not trained in industrial or business methods. Many who are concerned with the establishment of such laboratories, especially in connection with hospitals, pharmacies, and with medical groups, are not conversant with the subject.

The factors to be considered will vary with the given laboratory. The following will probably include all to be considered:

The first comprehensive item to be considered is the proportionate charge for what may be called the overhead or fixed expense. This is the cost of main-

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* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., City of Washington meeting, 1920.

[1] Pathologist and biological chemist of Muhlenberg Hospital, Plainfield, N. J.

taining the laboratory, including rental or depreciation of building, taxes, assessments and repairs, heat, light, water, telephone and telegraph service, porter or janitor service, etc., as in any other business.

Then comes the average depreciation and replacement cost of equipment. This is more significant at the present time than it was in the past, because of the marked advance in the cost of such material.

The cost of reagents is next to be considered. This will not prove as great in the hands of an intelligent, skilled analyst as in the services of a poorly qualified one. As a rule, in a properly conducted laboratory, the cost of reagents will not be large when compared with the volume of work accomplished. The cost is likely to be greater for the maintenance of a hospital or municipal laboratory than for a private or commercial one. In the former type much work must be done without netting direct monetary returns. Due to interne inexperience and student service, this cost is also increased. Research work should be provided for in hospital and municipal laboratories. In the former institutions an effort should be made to secure endowments for research and for the laboratory, otherwise it is unlikely that due consideration will be given for this in the hospital budget.

The average time required to make a certain kind of an examination constitutes an important item for consideration. Herein the judgment of many who conduct laboratories is at fault. To correctly estimate this factor there should be included the average time required to receive the specimen and the data relative to it; the time consumed in making the analysis; the time required for recording and, if possible, to interpret the results, also the time to prepare for and to deliver the report; likewise the time to index and file it for future reference.

Whenever possible charge accounts should be avoided, as they increase the cost. Where indulged in, the time involved, the loss, etc., become factors in cost.

A fifth consideration is a personal factor. As in all skilled or professional service, the quality or value of the results depends upon the education, training, experience and reliability of the analyst. Hospitals and municipalities will in the future be obliged to provide larger appropriations for such services than in the past, and this will also affect private practice.

A sixth item of expense is chargeable to advertising and unpaid service. As in medical practice, some service will be rendered without remuneration; sometimes unwillingly, through bad charge accounts; otherwise, to patients of the cliental physicians, when the former are not in a position to pay for the service. In some states and cities these expenses may, in a measure, be unnecessary. The rendition of such service may be the result of more extensive examinations than the attending physician considers necessary, or the patient is able to pay for; these examinations may be needed for arriving at a conclusive diagnosis.

To illustrate: The physician may ask for a Widal test. Should there be typhoid or paratyphoid infection, and the test resulting negatively or very doubtful, the results might prove otherwise than an aid. Many paratyphoid infections seem to simulate malaria. Laboratories occasionally have repeated requests to search for malarial plasmodia, whereas a series of agglutination tests will quite frequently disclose an infection by the bacillus paratyphoid, type B.

In the writer's opinion, whenever possible a general charge should be made for a diagnostic laboratory examination, and a complete series of tests made to

not only seek evidence of certain conditions but to establish or rule out others. The tests included in such a series will change from time to time, as knowledge increases, or the facilities of the given laboratory improve.

At the present time the following would be a general outline of the procedure for the various classes of disease, employing such tests as appear to be of proven value:

Anemia—a complete blood count, urine and feces examination; occasionally, gastric examination, Wassermann reaction, and gonorrhoeal fixation test.

Diabetic cases—urine examination, blood sugar, alveoli carbon dioxide tension and alkali reserve determination, and a blood count.

Cardiac cases—a blood count, blood culture, urine, alveoli carbon dioxide tension and alkali reserve of blood plasma, Wassermann reaction, and gonorrhoeal fixation.

Gastric examinations—a complete clinical examination of the gastric contents by the Rehfus fractional method, feces and urine examination, and a Wassermann reaction.

Kidney involvements—urine, creatinine in blood and in urine, renal efficiency tests, *i. e.*, phenolsulphophthalein or Mosenthal fractional urine method.

Hodgkin's Disease, Lukemia, etc.—a blood and urine examination, Wassermann reaction and, at times, a tissue examination.

Mastoid—blood count and culture, urine and pus examinations, and pus cultures.

Pneumonia—blood count, urine examination, and sputum for tubercle bacilli, etc., and for pneumococcus type, etc.

Typhoid or Malaria—a blood count and malaria search, Widal reaction for typhoid, paratyphoid A and B, and for colon bacilli, general urine examination, and for bacteria by agglutination tests, or blood culture.

Meningeal cases—blood count, spinal fluid examination in general and by culture, and Wassermann reaction.

The enumeration and consideration of these several factors may prove enlightening to many physicians as well as to those conducting or contemplating the establishment of such laboratories.

An understanding of these factors will save many from being parties to agreements which are a discredit to their intelligence and, more or less, a fraud and menace to patients. This refers to entertaining a contract to have clinical laboratory work done for $100 or $150 a year by a laboratory agreeing to call for the specimens daily, to analyze and furnish a report on the same.

In the writer's opinion, it will be found that physicians who so contract do not average less than five specimens a day, and in the larger cities it is nearer to ten a day. This means that they pay from twenty-seven to forty-one cents a day for the daily collection, examination, etc., of five or more specimens. The writer, some years ago, when approached with such an offer, incurred the physician's enmity by telling him that "if he thought he could get ten or more urine, sputum and blood examinations a day for twenty-seven and a half cents he did not possess sufficient intelligence to bother with."

The Health Department of the City of New York conducted an investigation of such contract laboratories, with the result that they have fallen into disrepute in that city, only to be reëstablished elsewhere.

ABSTRACT OF DISCUSSION.

Henry J. Goeckel: At the 1919 convention of the American Pharmaceutical Association I presented a paper on "Pharmaceutical Education and Opportunities," to focus attention upon the subject of clinical pathology and its relation to pharmacy. I endeavored to bring out the fact that it is a branch of medical art and science which requires a greater chemical

and pharmaceutical knowledge than is required for the practice of general medicine and surgery, and that it should, therefore, be classed in the group of pharmacal medicine with pharmacology and pharmacy proper. For this reason it should have greater consideration by colleges of pharmacy giving advanced courses.

The clinical laboratory work can be divided into two classes or grades—that of the clinical laboratory technician, and clinical pathology proper. The latter is divided into three main subdivisions, *i. e.*, pathology, serology and bacteriology, and biological chemistry.

The technician's work is that capable of being readily done by one of limited knowledge and training in the subject. It requires sufficient knowledge to make a technically reliable routine urine examination, general blood counts, staining specimens for bacterial identification, milk examinations, and routine Wassermann serologic work, etc. To this extent every college of pharmacy should qualify its advanced students. In my opinion, every first-class prescription pharmacy should, if favorably located, be equipped for such work.

To the question of your Chairman, "Should this clinical course be given in the regular course at colleges of pharmacy?" I emphatically answer, "It should not." The regular course in pharmacy is to qualify the student to become a reliable and intelligent compounder of medicaments, and a more or less efficient business man. Every subject not germane to this end is detrimental to the interests of pharmacy, as it will detract from the main purpose. It should be given in the advanced courses, when the student has acquired the foundation for his pharmaceutical knowledge and is better qualified to take up the work.

With the rapid extension in the field of clinical pathology, the demand for laboratory examinations is increasing, and many more laboratories are being established, not only in connection with hospitals, but as state and municipal institutions. This is a field which American pharmacy should bestir itself to enter.

A student to become qualified as a clinical pathologist requires a more extensive training than is at present given by colleges of pharmacy, and will require more than a three-year course. It is a branch which can well be made a major subject in universities having both a medical and pharmacal faculty, where a longer course is given to qualify for the doctor in pharmacy degree.

Most physicians, because of their personal limited experience and the crowding of other more immediate needs of medical practice, cannot utilize and fully interpret the results of clinical laboratory examinations. It, therefore, becomes the function of the pathologist to interpret the results and know the clinical value of each test employed. To do this the clinical pathologist, besides being well versed in the chemical, pharmacal and general biological phases of analysis, must have a good knowledge of normal and pathological histology, embryology and anatomy. He must be qualified to do autopsies, and should know many things the physician must know, excepting physical diagnosis and prescribing. To qualify students in higher or advanced pharmacy for this work requires the coöperation of medical and pharmacy schools.

The demand for properly qualified clinical pathologists will, in all probability, considerably exceed the supply in a few years' time. They will, for the most part, be required for hospital laboratories, etc.

Curt P. Wimmer: Pharmacists, at this time, are not trained for the work, and the openings for pharmacists in this line of professional service are not numerous.

Bernard Fantus: In this line of work the pharmacist can and should reclaim some of his lost prestige. There is a wonderful field here for real professional work, and the pharmacist can rightfully claim it, if he will prepare himself for it.

Ivor Griffith: I agree with Dr. Fantus; diagnostic laboratories will become more popular, and physicians are learning to appreciate their value; hospitals and health department laboratories do not garner in all the work.

ALEXANDRIA SENNA CULTIVATED IN INDIA.

BY C. J. ZUFALL.

Recently, importations of an unusual, in fact, apparently unknown form of Alexandria senna leaves were received in New York. At first glance, these leaves seemed to be an admixture of Alexandria senna and India or Tinnevelly senna.

The leaves are unusually large, being 2.5 to 4 cm. in length and the product was practically free from broken leaves and stems. Alexandria senna from the Sudan always contains many broken leaves and stems. Careful examination, however, proved beyond a doubt that the product consisted of the leaves of *Cassia acutifolia*, commonly called Alexandria Senna. The shape, color, odor, taste, texture and character of hairs agree with the description of Alexandria senna, as set forth in the U. S. Pharmacopoeia.

Since these importations came from London, through which port most of the Alexandria and Tinnevelly senna received at the port of New York are sent, the country of origin was not known at first. Eventually it was ascertained that the leaves in question had been grown by a New York drug importer on his plantation in India. This importer undertook the cultivation of Alexandria senna in India some time ago, when that grown in the Sudan, giving way to the cultivation of cotton and foodstuffs, became scarce and expensive. Several tons of the pods of *Cassia acutifolia* were shipped from the Sudan to the plantation in India, where the seeds were removed and planted. The crop was a success, and, as a consequence, both of the species of senna given in the U. S. Pharmacopoeia are now coming into this country from India.[1]

The superiority of the Alexandria senna cultivated in India over that grown in the Sudan, in so far as size and purity are concerned, parallels exactly the improvement in quality which occurred in Tinnevelly senna when its cultivation was introduced in India from Arabia some one hundred and twenty-five years ago. In taste and odor these Indian leaves are equal, if not superior, to the Sudan leaves. The leaves, which are hand picked, have the advantage over the Sudan leaves in being unbroken and practically free from stems and dirt.

Alexandria senna from the Sudan has been adulterated with the leaves of *Cassia obovata*, or dog senna, as well as with Arabian or Mecca senna. This form of adulteration is difficult to detect in the grades known as "broken," "half leaf," or "siftings;" in fact, it is difficult to detect the presence of any foreign leaf in these grades if the adulterant is broken. Any form of adulteration is readily noticed, however, in the cultivated, hand-picked Alexandria senna from India, because it consists almost entirely of whole leaves.

PHARMACOGNOSY LABORATORY,
BUREAU OF CHEMISTRY.

A GOOD PRACTICAL TEST FOR HEAVY METALS IN ACETYL SALICYLIC ACID (ASPIRIN).

BY EDWARD C. MERRILL.

The presence of heavy metals in acetyl salicylic acid (aspirin), even in minute amounts, is one of the most important considerations to be taken into account in connection with the stability and keeping qualities of the finished product. Their catalytic properties are well recognized. The causes of such contamination, developing no doubt from conditions of manufacture, such as type and condition of containers, nature of water supply and other factors, have necessitated the development of certain practical and rapid tests for the presence of these minute but very disturbing elements of contamination.

[1] This information was obtained from Mr. Alfred Joensson.

A test for heavy metals, particularly iron and copper, is easily carried out as follows:

Place 10 grammes (approximately) of the powdered acetyl salicylic acid in a 300 mil Erlenmeyer flask of Pyrex or Jena quality, moisten with sufficient water to thoroughly saturate the mass without an excess of water being apparent. Close flask loosely with ordinary cork or cover glass and allow to stand on a steam bath, temperature 90° to 100° C. for 2½ to 3 hours. The development of a reddish color on the lower surface of the contents in the bottom of the flask as viewed by examining same through the base of flask is indication of the presence of iron. The development of bluish or greenish globules or consolidated blue spots in the base upon bottom of flasks as viewed similarly is a fairly reliable indication of contamination by copper.

Acetyl salicylic acid when tested as above should not show more than faint traces of a pinkish color (trace of iron) and should be absolutely free from spots (copper).

ANALYTICAL AND RESEARCH DEPT.,
UNITED DRUG COMPANY.

REVISING THE STANDARDS FOR HYDRASTIS.*

BY E. L. NEWCOMB AND C. E. SMYITHE.

The following total and acid-insoluble ash figures have been obtained from a study of commercial samples of the drug Hydrastis and samples prepared from plants grown in the Medicinal Plant Garden, College of Pharmacy, University of Minnesota.

Sample No.	Source of sample.	Part of plant.	Total ash.	Acid insol. ash.
1 *a*	Com'l	U. S. P. powd.	6.28	...
b	Com'l	U. S. P. powd.	6.49	...
c	Com'l	U. S. P. powd.	6.8	3.02
d	Com'l	U. S. P. powd.	6.74	3.58
2 *a*	Com'l	Whole U. S. P.	7.2	...
b	Com'l	drug, rhizome	6.85	...
c	Com'l	and roots	7.38	3.34
d	Com'l	" "	7.39	3.42
3 *a*	Com'l	Whole U. S. P.	6.99	...
b	Com'l	drug, rhizome	6.97	...
c	Com'l	and roots	7.2	2.93
d	Com'l	" "	7.17	3.00
4 *a*	Com'l	Whole U. S. P.	3.51	...
b	Com'l	drug, rhizome	3.79	...
c	Com'l	and roots	3.79	0.22
d	Com'l	" "	3.82	0.35
5 *a*	Com'l	Roots, only the	3.46	0.023
b	Com'l	larger roots,	3.55	0.084
c	Com'l	very clean	3.5	0.071
d	Com'l	" "	3.47	0.07
6 *a*	U. of M.	Roots only,	4.67	...
b	U. of M.	large and	4.17	...
c	U. of M.	small, well	4.20	...
d	U. of M.	cleaned	4.73	...
e	U. of M.	" "	4.46	...
f	U. of M.	" "	4.68	...
g	U. of M.	" "	4.75	0.29
h	U. of M.	" "	4.60	0.53
i	U. of M.	" "	5.08	0.32
7 *a*	U. of M.	Rhizomes only,	4.66	...
b	U. of M.	well cleaned	4.67	...
c	U. of M.	" "	4.90	1.6
d	U. of M.	" "	4.91	1.62
8 *a*	U. of M.	Rhizomes and	5.05	...
b	U. of M.	roots, well	5.15	...
c	U. of M.	cleaned	5.36	1.13
d	U. of M.	" "	5.24	1.07
9 *a*	U. of M.	Lamina and	11.82	...
b	U. of M.	petioles	11.74	...
c	U. of M.	" "	12.94	1.75
d	U. of M.	" "	13.02	1.31
10 *a*	U. of M.	Petioles only	7.89	Ash almost completely sol. in 5% NCl
b	U. of M.	Petioles only	7.42	
c	U. of M.	Petioles only	8.58	
d	U. of M.	Petioles only	8.70	
11 *a*	U. of M.	Lamina only	13.1	2.8
b	U. of M.	Lamina only	12.0	1.34
c	U. of M.	Lamina only	14.06	2.4
d	U. of M.	Lamina only	15.08	2.6
e	U. of M.	Lamina only	14.19	1.6
f	U. of M.	Lamina only	14.13	1.56
g	U. of M.	Lamina only	14.16	1.7

* *Northwestern Druggist*, February 1921, p. 35.

All of the commercial samples were of excellent general appearance. Sample No. 4 was especially bright, bold and clean. Sample No. 5, consisting of roots, was separated from No. 4. The results on the study of the commercial samples indicate that the normal ash of the drug is usually between 3.5 and 4.5 percent.

The University of Minnesota samples were prepared from material collected during the latter part of August and the first of September. All parts were fairly well cleaned before being dried, the underground portions being rinsed with water. Some adhering soil, however, was not removed, as we found upon separating roots from rhizomes. This shows up in the ash of the rhizome and roots No. 8.

The results on the study of the Minnesota drug indicate that the normal ash is between 3.5 and 4.5 percent. From our results it appears that there is very little difference between the normal ash of the roots and the rhizomes. This is indicated in the study of the U. of M. and the commercial samples.

The limit of 6 percent for total ash, set by some foreign pharmacopoeias as pointed out by Viehoever,[1] is undoubtedly too stringent. A limit of 8 percent for total ash would no doubt be satisfactory.

Relative to the acid-insoluble ash we are inclined to believe after a careful study of Viehoever's data, as well as our own, that this had better be set at 3.5 percent for a maximum. The difficulty in cleaning the drug and the relatively high normal ash of the overground portions of the plant as presented herewith, indicate that a rather liberal allowance should be made.

In any event, it is highly important that the amount of dirt permitted in vegetable drugs be limited. We should have clean drugs as well as drugs high in medicinal value. Some of our recent studies indicate that even small amounts of so-called dirt may possess therapeutic qualities, quite different from the drug from which the dirt was separated. Who knows what the therapeutic action of the dirt in our crude drugs is?

DEPARTMENT OF PHARMACOGNOSY,
UNIVERSITY OF MINNESOTA.

BACTERIA IN (SO-CALLED) SOFT DRINKS.*

BY LOUIS GERSHENFELD.

Scientific investigation has given ample proof that there is a close connection between the spread of diseases and the water that is used in the same community. A pure water supply is of first importance in the prevention of disease and in the conservation of public health.

In the past, and from time to time, there has been considerable discussion over the superiority of the chemical or bacteriological examination of water. This has been quite useless, for though a bacteriological analysis may be shown to be of greater importance, a chemical examination will detect the presence of certain chemical substances, from the relative amounts of which an inference may be drawn as to the existence of pollution with human or animal excreta or, in some instances, with poisonous or injurious compounds. It is, therefore, apparent that both examinations should be carried out.

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[1] "Commercial Hydrastis," A. Viehoever, JOUR. A. PH. A., 9, 779 (1920).

* From an article presented by the author before Pennsylvania Pharmaceutical Association, 1920 meeting.

It is with this in mind, that communities are compelled, either by state or other recognized authority, to determine the purity of their water supplies, by performing bacteriological and chemical examinations at such intervals as may be found necessary for the particular community.

It is evident, of course, that steps taken for the careful guarding of our water supplies are justifiable. Furthermore, it is apparent why sanitarians soon became interested in the control of milk, cream, ice cream, ketchup and other food supplies, so as to be assured that these products will not introduce disease into the communities. But there seems to be one class that has been sadly neglected by the sanitarians. There are many who use soft drinks (bottled or otherwise) almost exclusively for drinking purposes.

The writer is aware that some municipalities attempt to guard the market supply of soft drinks, but he is assured that such effort in behalf of the health of the respective communities is indeed small. A pure soft drink is just as essential in the prevention of disease as is potable water, milk, etc. The chemical methods for examining soft drink supplies will not detect the presence of bacteria, much less assist in their identification. A bacteriological examination of such water will, however, reveal the number and in some instances the types of bacteria in a given volume. The fact should not be overlooked that, even though a potable water was used, the finished product may be highly contaminated, due to careless and unsanitary methods in the manufacture of the preparation.

The bacteriological examination of soft drinks is a direct and delicate test of the sanitary efficiency of the plant, and of factors that have an important bearing on the value of the finished product. An analysis of the bacterial content of soft drinks will quickly reveal the hygienic conditions prevailing at the time of the manufacture of the particular preparation. Such early examination will prevent epidemics, inasmuch as they quickly act as a check, if the manufacturer is on his guard. It is advisable and necessary to make periodical inspection of the plant, check up the environmental factors, observe the cause of the pollution, and advise remedial measures to correct defects that may exist.

It has been the pleasure and privilege of the writer to guard, from a sanitary standpoint, the making of soft drinks, and it is for this reason that he advises all manufacturers, not only of soft drinks but of all bottled water, to protect themselves by carefully supervising their finished preparations. It is advisable that they start early and control the bacterial content of their samples, before they are compelled to do so, as there is no doubt that, in the near future, legal requirements will govern such supervision.

The community has a right to demand that whatever qualities soft drinks may claim and possess, these should be secondary to cleanliness. It should be the duty of those who guard the health of the community to determine whether or not these products are free from contamination. The public is demanding this, and they have the right to expect it. Many laymen are under the impression that such strict supervision is at present being conducted by the proper authorities.

The water used in the manufacture of the soft drinks in the plants under the writer's supervision, was usually represented by potable samples. The contamination is frequently due to the careless washing of the containers, or the introduction of a contaminated flavoring syrup, or by other details of the opera-

tion. Actual inspection of the plant at every stage of its handling, together with a close bacteriological examination of all ingredients entering into the preparation of the beverage will quickly disclose the responsibility for an unsuitable end product. Such inspections and examinations save untold worry and considerable expense, in the long run.

An artificially carbonated water prepared under clean conditions will usually show a low bacterial content. In fact, the writer carbonated a number of samples on one particular occasion—the containers were cleansed properly, the flavoring syrup was low in bacteria, and all other procedures were guarded as they would be by any other layman familiar with the simple technique of filling the bottles; the bacterial content of the finished preparation was lower Cc. per Cc. than was observed in the water used in preparing the product.

To actually show what the condition is, so that other workers may join in further investigating this most interesting problem, and that the honest, modern manufacturer who produces soft drinks (bottled or otherwise) may prepare a commercially possible, potable product without burdensome restrictions, the writer obtained 15 samples of different brands of soft drinks. Many of these were bought during the months of April and May 1920; the writer personally obtained them from lots that were delivered (in most instances) in his presence. He was thus assured that the samples represented the finished product, as sent out from the plant by the various manufacturers, and does not represent samples that were allowed to incubate at room temperature or in a hot-bed, as observed in many of the retail stores.

Of the fifteen, six (or 40%) were found to contain *B. Coli* in 10 Cc. portions. Lactose Bile and Lactose Bouillon were used for the presumptive test of *B. Coli*. Three 10 Cc. portions were used. In all of the six reported instances, *B. Coli* were isolated from the fermentation tubes. One gave considerable gas with all three 10 Cc. portions. No *B. Coli* were found, but *B. Welchii*, another sewage bacterium, was found present.

Total bacterial counts on agar at 37° C. after 48 hours incubation:—Two had counts lower than 100 per Cc. Three samples showed the presence of less than 300 bacteria per Cc. Three others had a bacterial content ranging between 500 and 1,000 per Cc. The other seven had a count of over 1,000 bacteria per Cc. The bacterial count on agar at 20° C., in almost all of the foregoing samples, was somewhat higher than the 39° C. counts.

Some of the organisms found were staphylococcus, short and long chain streptococci, *B. Coli*, *B. Welchii*, *B. Cloacae*, *B. Subtilis*, *B. Mycoides*, *B. Mesentericus vulgatus*, diphtheroids, streptothrices and molds.

The occurrence of some of the foregoing does not speak well for the cleanliness of the samples and the desirability of frequently indulging in such drinks. More attention should be given to the sanitary aspect of this important matter so that all concerned may profit thereby.

THERAPEUTICS.*

BY A. R. L. DOHME, PH.D.

The word "therapeutics" is derived from the Greek verb "therapeuein," to serve. Its derived or secondary meaning, hence, is service in the cure of or, failing in that, the lessening of the evil effects of disease. It is the branch of medicine which deals with the treatment of disease. Nature cures, physicians treat, says Lauder Brunton. Nature tries to right her own disordered organs and her power to do this is called the *vis medicatrix naturae*. A proper therapeutics should reckon with and not counteract or destroy this power of nature in the human body.

A cure or successful treatment of disease may be either symptomatic or radical and the essential feature to make it successful, if radical cure is aimed at, is to know the cause of the disease. Thus gout manifests itself in various symptomatic ways in different people, to wit: (1) eczema of skin attended with itching, etc.; (2) neuralgia with severe pain; (3) bronchitis with cough; (4) dyspepsia, with flatulence and intestinal disturbance; (5) inflammation of big toe with redness, swelling and pain. Symptomatic therapeutics aims to relieve the respective conditions, to wit: itching, neuralgic pains, cough, flatulence and swelling. Radical therapeutics aims to eliminate the gout itself. In many cases medicine is ignorant of the real cause of the disease or holds to various theories regarding same, in which case symptomatic treatment is employed to make patient comfortable, or combined with this a radical treatment based upon the theory of the seat of the underlying disease held by the individual physician treating same. This treatment or therapeutics may be either empirical, which means based upon inherited usage not based upon knowledge of the reason of the drug's action; or it may be rational when it is based upon real knowledge of the effects of a remedy. The study of disease from the standpoint of observation and experiment or cause and effect began with John Hunter, followed by Magendie, Claude Bernard, Gaspard, Villemein, Pasteur, Koch, Ehrlich, etc.

Disease may be due to failure of some of the organs and parts of the body to operate normally and properly, thus if the heart action is too strong or too weak, thyroid gland secretions are excessive or insufficient, etc., etc.; these may be individual or personal and may, hence, be called normal causation of disease. By far the most diseases are, however, caused by the invasion of the body by bacteria or organisms of some sort, which either themselves destroy tissues and cells as, for instance, syphilis, or whose excretionary products or toxins destroy tissue or poison the host. In disease, usually, certain physiological functions are disordered, and it is the work of therapeutics to endeavor to again have those functions become normal. In general various kinds of therapy are available—suggestion, dietetic-, physico-, pharmaco- and surgical. Each has its field and usefulness. Many patients try out one after the other of these kinds or schools of therapy and finally conclude with the radical use of the knife. A specific therapy or one which strikes directly at the cause of the disease is the exception rather than the rule, the rule being either an empirical or rational therapy of symptoms,

* Read before joint meeting, City of Washington and Baltimore Branches, A. Ph. A., City of Washington, January 25, 1921.

the exception being such specific therapy as salvarsan, quinine and malefern. Serum therapy is supposed to be specific, but it is only indirectly so, inasmuch as the serum, being an antitoxin, merely destroys the effect of the toxins or products of the specific organism. This, to be sure, removes the danger of the disease which consists in toxemia from the toxic excretory products of the organism. Has it ever occurred to you that of the approximately 1000 official products of the U. S. P. and approximately 850 products of the N. F., there are practically not any specific drugs, they are all agents to restore physiological normality or treat symptoms; thus hypnotics, diuretics, laxatives, anesthetics, diaphoretics, antiseptics, antipyretics, digestives, antacids, etc., by paralyzing nerve centers, stimulating the kidney or bladder, producing peristalsis, stimulating sweat glands, etc., etc., make the patient more comfortable and help him by overcoming some of his physiological abnormalities or disturbances?

Before I take up the subject of remedial agents let me call attention to a matter of therapeutic nomenclature. It is the word "pharmacology." By many, perhaps most people and therapeutists, it is accepted as a general word to cover anything that has to do with drugs, *i. e.*, the science of drugs, from the Greek *pharmacon-* a drug, and *logos-* a discourse. To the knowing few it means the science of the effect of drugs upon the animal body and subsequently the human body. The pharmacology of digitalin is the observed effect of digitalin upon the heart, blood pressure, temperature, kidneys, liver, blood, etc., of a dog, guinea pig, etc., etc., and thereafter, at times, upon the human body and its organs in the clinic. I feel that some central authority as the American Medical Association should properly define the term pharmacology. Wood says pharmacology is the science of drugs, and pharmacodynamics is the study of the effect of drugs upon the healthy animal organism; Cushny says pharmacology is the study of the changes induced in living organisms by drugs.

In earliest times drugs consisted of animal and vegetable products with a few mineral products. Gradually the animal products gave way to vegetable products entirely until the alchemists took up mineral products, largely, and neglected vegetable drugs, and therefrom emanated the science of chemistry, which began with mineral substances and then later developed the organic side. So remarkable was the interest in carbon chemistry that inorganic chemistry went into almost complete eclipse, due to the easy and manifold changes carbon compounds underwent in the skilled hands of the chemist; especially when coal tar first made its appearance and became the mother substance of an almost endless series of new classes of organic compounds; among these the dyestuffs, first called aniline dyes, but incorrectly so, since the best dyes to-day are in no wise related to aniline. Probably the migration of chemists everywhere to this field caused some reaction in the case of a few more mathematically than experimentally inclined chemists and physicists and induced them to come back to the inorganic side and develop the science of physical chemistry. The discovery of radium and radio-activity helped this reaction and, in consequence, to-day the great advances in the science of chemistry are being made in the field of physical chemistry where the theory of solution, the nature of the atom and the study of colloids is fast causing a return of the carbon chemistry hordes to this fascinating and more important field. In my days as a chemical student we were so anxious about what

resulted by mixing two solutions that we overlooked the solution itself and assumed that it merely was the mechanical solution of the substance in the solvent. Because strong solutions of a ferric salt and ferrocyanides gave a dense crystalline blue precipitate, we did not stop to study why dilute solutions of the same gave only a blue solution and concentrated solutions gave a gelatinous blue mass. In consequence the "world of neglected dimensions," as Ostwald calls colloid chemistry, escaped our attention. One of the results, however, of the migration into carbon chemistry fields was the change of therapy—for it flooded the world with so-called synthetic organic drugs, beginning with antipyrine, which the influenza epidemic of 1889–1890 forced into universal prominence, and running for thirty years through a gamut of new patented organic compounds, used very generally by all and for all ills of the flesh. If there is an ailment or symptom for which aspirin is not used by some one person I have failed to note it. Whether it possesses any real merit for anything I have my serious doubts, but the so-called coal-tar synthetics had to run their course and expend their much-heralded and advertised merits. Their sun has passed its zenith and is rapidly approaching its setting despite newspaper advertising and panacea claims. The night of the synthetic crystalloid is becoming the dawn of the re-birth of the crude drug and the colloid, probably because in the human body and the plant the condition of matter is the colloid condition and results are obtained from opium that are not possible with morphine, and from nux vomica that are not possible from strychnine. The active principle is by no means equal to the drug of which it is a part and particularly is the crystalline morphine sulphate not equal in effect or similar in effect to the colloid opium. To be sure, morphine sulphate has played a very valuable and important rôle in medicine and will continue to do so, but I feel that I will live to see the day when colloid morphine will replace crystalloid morphine, at least for many purposes. Hence, it would seem that we are in another transition period in therapeutics—a period that seems to me a transition in two dimensions. The one is the change from crystalloid to colloid for the therapeutic agent, as an abscissa; and the other the change from a symptomatic to a specific therapy, as an ordinate, and between these two variants the curve of the future therapeutics will be drawn.

Therapeutics has been, because of the absence of scientific foundation, more or less of a hazy subject and hence has not progressed nearly as fast or effectively as surgery, which is based upon anatomy and pathology and physiology, all of which are fully developed sciences. When the time comes that therapeutics will have to deal with specifics instead of symptomics, if I may coin a word to express the bulk of remedial agents of to-day, then medicine as therapeutics will come into its own and the *vis medicatrix naturae* will not be looked to so generally for positive results. Of course, our knowledge of the causation of disease will have to make some progress before a specific medication can rise to give it battle. We must know the cause of so many of our diseases whose origin is yet shrouded in mystery, such as diabetes, anemia, nephritis, scarlet fever, smallpox, measles, whooping cough, cancer, sarcoma, etc., etc., but these will sooner or later become known; and, above all, we must learn to know what changes and processes take place in the living cell in health and in disease. Even many of those diseases whose cause is known, such as tuberculosis, typhoid fever, pneumonia, cholera, ery-

sipelas, etc., etc., we are to-day perfectly powerless to combat by the agencies of therapeutics. We can and usually do—may I say we always do—treat their symptoms or their effects or the abnormality of physiological processes produced by them. But we practically never are able to treat and either paralyze or destroy the nigger in the woodpile—the bug or beast or enzyme or agent that is the cause of the disease. This rascal escapes our therapy, for with the exception of salvarsan for the spirochete, quinine for the plasmodium, santonin for the worm ascoris, and malefern for the tapeworm, whatever in our therapeutics ends the invader's life process—also ends the life process of the invaded and as the latter is the object of our care and solicitude and the end and the aim of our therapeutics, we call off our therapeutics and trust to the *vis medicatrix naturae*, in other words, let our patient fight it out with the bug and try to make the battle as painless and comfortable as we can, and especially look very wise and hope for the best. Great men in medicine have labored long and hard to learn the cause of disease and the effects of disease, and books upon books have been written upon the subjects of etiology and pathology of diseases. How few men have worked and how few books have been written upon the cure of disease—in fact, medical men so dislike the word cure that we had better use the term successful treatment of disease.

When will therapeutics become the science of the elimination of disease instead of the science of the counteraction of the effects of disease or of the reinforcement of the tissues in their struggles to maintain their functions? As the avenues leading to successful effective elimination of disease after it has manifested itself in the human body appear to be jungles too closely and densely overgrown to admit of a hopeful and ready entrance—or to speak plainly are as yet *terra incognita*—another entrance from quite a different quarter into this *terra incognita* is being now actively chopped with the axe and machete of preventive medicine. If we cannot find a therapy which will destroy the nigger in the woodpile of our jungle let us try to prevent these same niggers from getting into the jungle by destroying them in their native and favored breeding ground. Thus has the great and powerful and ably managed world-wide Rockefeller Foundation undertaken to seek out these breeding places of the yellow fever mosquito, the malaria plasmodium, the hook-worm, the cholera bacillus, the smallpox organism, etc. If this can be successfully accomplished for some of these diseases it will prevent us from being attacked by these diseases and therefore avoid the necessity of subsequently eliminating or destroying them. The success of hygiene and preventive medicine is to-day the most hopeful and important attack at present being made upon the citadel of disease. This attack will, however, probably (and I say probably advisedly, because preventive medicine is in its infancy and no one can foretell what it may be able to do when it reaches adolescence and maturity) not eliminate those diseases whose causative organisms are more or less omnipresent in our atmosphere and vegetation, such as tuberculosis, pneumonia, cancer, influenza, scarlet fever, whooping cough, etc. For these diseases we need specific therapeutics and, as all of them are due to an organism which we can appropriately call a pathogenic organism, the most effective therapy would be a germicidal agent which, while destroying the invading organism, does not destroy or injure the invaded host—our patient. Many scientific men have hoped

they had found such an innocuous internal powerful germicide, but were disappointed by the results of its use by the medical profession. Such a therapeutical agent would prove more valuable in one minute than the major portion of our Pharmacopoeia and National Formulary in its lifetime, for it would be an effective agent in the radical specific therapeutics of most of our diseases as against an endless variety of the more or less empirical symptomatic therapeutical agents that constitute the present armamentarium of the physician.

We, surely, all concede that physicians are doing the best they can and applying in most cases at least the best knowledge that is available in their therapeutics. When one picks up the last edition of "Frankels Arzneimittelsynthese," with its 800 pages of description of effects to produce specific medicines one is astounded to find how little of real value to destroy disease producers has been evolved. Practically all of the *specifics in spe* turn out to be only another *symptomic in re.* We know the effect of organic groups and inorganic radicals fairly well, thus added hydroxyl groups in aliphatic compounds weaken their effect and the same in aromatic compounds. Halogens in aliphatic compounds increase the depressing effect upon the heart and also make them more toxic; amine groups and nitro groups also increase toxicity; ketone groups, like alcohol groups, produce narcosis and reduction of blood pressure; carboxyl groups as a rule decrease physiological effect; double and triple bonds increase toxicity; esters reduce the toxicity of alcohols and acids, as we see in salol; acetylated amines are less poisonous and depressing than amines, as we see in phenacetine. Amines in general are antipyretic and antineuralgic in their effect, but in order to destroy their toxic effect hydroxyl must be introduced and the amine further weakened toxically by acetylization and methylation or ethylation; a cyclic or ring formation seems essential to physiological effect, as practically the same substances in open chain are devoid of effect, while when the anhydride formation closes the ring—physiological effect appears; side chains are, however, necessary to make this effect of value; hydroxyl groups in such cyclic groups are frequently the cause of narcotic effect; practically all vegetable laxatives are derivatives of anthraquinone, and anthelmintics appear to be derivatives of phloroglucin, etc., etc. In this way we can connect up in some way therapeutic effect with chemical composition in organic compounds in a general way; but unfortunately little of it is of value, because there are few general rules and most cases are exceptions. Besides this they are all synthetic organic compounds and practically all are crystalloids, and the day of this class of compounds is at present on the wane; although doubtless valuable new synthetic organic compounds that will prove to be specifics will yet be discovered.

The future of therapeutics, to my mind, lies in the colloid field, and in this field are the crude drugs if administered in their natural state and preferably in the fresh state, rather than in the cured state—although a drug cured at a moderate temperature has probably not lost its colloid nature and hence should be effective. But besides the crude drugs, which are most complex, we have the possible field of colloid metals, colloid salts, colloid compounds, in fact, it has been stated by Ostwald and others that almost any compound or salt or element can be converted into the colloid state. If the human body is colloid as far as its fluids are concerned and these are the elements of the body that convey medicines and deliver them to the place where they are to act, then the drugs that are

to act and to produce an effect in relatively small quantities should, preferably, also be of a colloid nature. This field has only just been touched and it is rather an unexplored forest in which, however, most marvelous phenomena and discoveries are being made by those who have plunged into it. Most chemists, notably those of us who are entering into the sear and yellow leaf stage of our career, are not yet capable of thinking and reasoning in the syllogism of colloid chemistry and we are yet measuring it with the wrong yardstick. In fact, to tell you the truth, those of us raised in Dalton and Mendelejeff and Beilstein have to relearn our chemistry, just as the school boy does his three R's, if we hope to be in the game of chemical and therapeutic science for the next decade. Our chemistry, which to us seemed so scientific and smooth, is distinctly empirical in the light of the knowledge of to-day and, what we and our teachers thought were careful observations, such as the solution of salt in water, were in reality most superficial observations. The despised amorphous colloid to which we gave not even a passing glance is the real live, hopeful messenger of good tidings of to-morrow. The great problem is going to be to get the physician, as well as the pharmacist, to take us at our word and believe in us when we begin to talk to them in terms and in terminology of the "world of neglected dimensions," as Ostwald now designates colloid chemistry. The chemist who formerly cast shy glances and looked askance at mathematics will, in the years to come, have to learn his higher mathematics if he hopes to be a success in the therapeutics and the pharmacy of to-morrow. Crystalloid gold, silver and iron have but little effect therapeutically, but watch what colloid gold, silver and iron will do to the cells of our bodies in 1925. I have recently had some experience in this field, and from what I have seen and what I know I can predict, I think, with equanimity and calm assurance that great things are on the horizon and great possibilities loom up on that horizon that spell big achievement in the field of pharmacy, chemistry and therapeutics. Prominent among these possibilities is the birth of specifics in therapeutics, and the physician of to-morrow will no longer be satisfied to depend upon the "*vis medicatrix naturae*" with its long list of symptomics, but he will be able to call to his aid a line, which need not be very long at that, of specifics. Specifics that are not merely agents to reduce a fever, open up a constipated bowel, induce an unwilling bladder to micturate, or a sweat gland to perspire, or a pain to be temporarily stifled by a narcotic, etc., etc., and yet let the demon eating at our vitals continue to live in luxury and peace; but specifics that strike home at the bug that is at the root of our troubles and make life so miserable for him that he will pass out of our life and pass up his own as well, thus doing away at one fell swoop with the necessity of adding to the prescription many, if any, of the legion of symptomics which now constitute the major portion of the United States Pharmacopoeia, the National Formulary and the small volumes commonly known as the price lists of manufacturers of pharmaceuticals and chemicals.

The Pharmacopoeia of 1930 will, in all probability, be a somewhat thinner tome than that of its immediate predecessors and it will, probably, also be made up somewhat, at least, of different substances. When this occurs therapeutics will no longer be the art of applying substances used to counteract the effects of disease, as Cushny aptly and correctly defines it, but the art of applying substances used to destroy the cause of disease.

UNIFICATION OF PHARMACEUTICAL EDUCATION.*

BY C. B. JORDAN.

Professional education in the United States is still so young that we can trace the effects of our beginnings upon the present-day systems. Much of our pharmaceutical education, as was the case of other professional education, has been a "miss and hit" sort of a thing. It has not been developed according to any well-conceived and well-thought-out plan, but rather according to the ideas and whims of the individual or individuals in control of the several schools and colleges. As a result we have many schools with many different aims and purposes, each trying to best fill the need of its particular clientele.

The other professions, especially our sister profession of medicine, have outgrown these early attempts and have placed their educational endeavors upon a good foundation of secondary school and college training and now have well-rounded courses of study. There still remains in pharmaceutical training much of the individualistic tendency and we yet have schools of all grades from the "cram" school to the thoroughly organized and well-equipped Pharmacy College. How to unify and bring this varied educational endeavor up to a standard that will provide us with thoroughly trained practitioners is, I believe, a task for all pharmaceutical organizations to engage in. It is particularly a task for the American Pharmaceutical Association, and a brief consideration of past and present conditions will help us to more thoroughly grasp the bigness of the problem.

The early school of pharmacy was organized and often owned by a man, or by men, who loved their profession and who delighted in teaching its mysteries. Their desire to perpetuate and to increase pharmaceutical knowledge was a very laudable one, and great credit should be given them for their efforts in behalf of our profession. However, the teaching was often a "side line" to business and the methods used as varied as the minds of those who used them. Each state had its own pharmacy laws and these differed greatly. The schools organized in the different states reflected this difference because one of the objects to be kept always in mind by these teachers was the giving of a training that would fit their students to successfully secure licenses to practice pharmacy. The results of such haphazard methods were frequently bad, but were lost sight of in the very bigness of our country. Distance has been so remarkably annihilated by modern means of travel that any part of our great country is easily accessible and there is to-day no legitimate reason why each city, or county, should maintain a school of pharmacy to supply it with licentiates. So, as I see it, we have come to that point in our educational development when serious consideration should be given to the best methods to be used in unifying and perfecting our professional training.

Many of our schools make no attempt to give their students any training other than that required for their professional and commercial work. In our Two Year Course, which is the standard course in practically all schools, it is impossible to give the students any of the broadening courses, so-called cultural or humanity courses, because the time is so limited that only strictly professional work can be

* Read before joint session of Section on Education and Legislation, A. Ph. A., American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, City of Washington meeting, 1920.

given. This means that nearly all of the young men and women coming into our profession are trained only in professional studies. If we give thought to this for a few minutes, we can readily understand why the doctor, the chemist, the engineer, the lawyer and the agriculturist, all graduates of at least a baccalaureate course, are better equipped to meet the demands laid upon an intelligent citizenship. Since we are compelled to meet and compete with men who have had a better foundational training than we are requiring in our profession, is it not time that we began to take steps to remedy this defect in our educational system?

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy have been working upon the problem of entrance requirements and have at least partially solved it by pledging themselves to go to the high school requirement in 1923. There still remains the problem of how our schools and colleges are going to meet this demand and measure up to the responsibilities that it will place upon them. This is indeed a serious problem for many of our schools. Manifestly a college that has heretofore based its teaching upon little or no preliminary training must make decided changes in methods, equipment, teaching staff, etc., before it can successfully handle the product that will come to it. Will it be possible for our smaller colleges, especially those that depend upon student fees for financial support, to make the necessary changes? Many of these smaller colleges are now experiencing financial difficulties and are unable to bear any added burden. Some solution must be provided to enable them to successfully continue their work. I believe that the logical solution is the consolidation of two or more of these schools into a larger, better-equipped, and better-financed college.

Consolidation of schools and colleges is not a new idea. It was long ago recognized that one well-equipped and well-supported school provided better facilities for imparting knowledge and did more efficient work than many small and poorly supported ones. The Township Unit Systems, prevalent in many states, are the direct outgrowth of this idea. These Township Unit schools have given a very practical demonstration of the advantages to be gained by consolidation.

During the past fifteen years we have witnessed the consolidation of many medical schools and colleges. The Indiana Medical College is a product of such consolidation. In 1878, the College of Physicians and Surgeons combined with the Indiana Medical College and they were known as the Medical College of Indiana. In 1905, the Medical College of Indiana, the Central College of Physicians and Surgeons, and the Ft. Wayne College of Medicine merged under the name of the Indiana Medical College, the School of Medicine of Purdue University. In 1907, the Indiana University School of Medicine and the State College of Physicians united, and, finally, in 1908 the two remaining colleges united as the Indiana University School of Medicine. Thus we see that the present institution is made up of six smaller ones. No one doubts the wisdom of this combination. A similar movement took place in Cleveland, Ohio, when the five medical colleges consolidated into the present School of Medicine of Western Reserve University. In both of these cases the consolidated college ranks higher and gives better instruction than could possibly be given by the separate colleges. This is true because the consolidated college is better supported and hence can provide the neces-

sary laboratory facilities and teaching staff to give efficient instruction. Examples of such consolidation in medical education could be multiplied, but sufficient has been given to show the value of consolidation.

The consolidation of the Medico Chirurgical College of Pharmacy with the Philadelphia College of Pharmacy, and the Northwestern University School of Pharmacy with the Illinois University School of Pharmacy is accepted by all pharmacists as a good move. I believe that in each case all or part of the instructional staff was taken over, together with the alumni, so no one was done any injustice by the consolidation.

Formerly the pharmacy school that fitted men to pass the State Board was considered by many as filling a legitimate place in pharmaceutical education. The rapid advance of prerequisite legislation has eliminated many of these. It is true that there are some still in existence, but with the new requirements they must eliminate themselves or prepare to give different instruction. With the passing of this class of colleges of pharmacy, passed also the need of different grades of colleges.

The requirements for the practice of pharmacy in some states are now so high that only first-class colleges can meet them. This means that a student graduating from any but a first-class college cannot secure registration in these states either by examination or by reciprocity. It is therefore up to the colleges to meet these requirements or they will handicap their graduates. Since only colleges of pharmacy of one rank, and this a high one, are demanded, there is every reason why colleges should consolidate into such a one.

The equipment and upkeep of good modern laboratories is very expensive. To realize on the investment, a good attendance is necessary. In many states there are not more than 70 or 80 students graduating in one year. One well-equipped college could easily handle all of these students. In fact, some of our eastern colleges are handling two or three times that number. What is true of laboratory equipment is also true of the teaching staff and there can be no doubt but that consolidation would provide better facilities and better instruction at a less rate per capita, therefore it would be more economical.

Some have felt that it was necessary to have several colleges located at convenient points. This used to be true, but with present-day rapid and various methods of travel, this need has been eliminated. Many states have but one medical college, but one agricultural college and but one engineering college, and no one complains that these colleges are not accessible. Several states have no colleges of pharmacy. Vermont, New Hampshire, and Connecticut have no colleges, and the Massachusetts College is located at one side of the state. The pharmaceutical students of these states all have to travel to Boston, except perhaps those adjoining New York State, yet there does not even seem to be a call for cram-colleges in this territory. From this it is clear that the old need of several colleges because of accessibility has been done away with, and one college located at a convenient center in the state would be accessible to all.

Thus far, I have viewed this question from the standpoint of the advantages to be gained by the pharmaceutical students, but how will consolidation affect the public and the retail pharmacists? The public demands competent pharmacists, and only by supplying competent dispensers will the public health be protected.

The retail pharmacists demand competent dispensers and wide-awake young men for the necessary commercial transactions of the modern drug stores. Will these needs be better supplied by consolidation? There is not one college of pharmacy that could not do more efficient work, if the financial support of the college were increased. With increased financial support, more and better equipment could be provided and more instructors, with corresponding division of work so that each one will impart instruction only in branches in which he is especially prepared. Consolidation will, as in the case of medical schools, make possible the increase in equipment and instruction and hence increase the efficiency of the teaching.

To summarize, the advantages to be gained by consolidation are: *First—Professional.* A large well-equipped, well-financed college can give better instruction. It can afford better equipment and better-trained teachers. The old days, when a college could consist of a meager equipment of mortars and pestles, retorts and a few crude drugs, housed in a vacant room above the drug store, *have passed.* Modern equipment is necessary for successful teaching. The burden of securing this modern equipment is indeed a heavy one for the small, poorly supported college.

Second—Economic. This needs no explanation to the pharmacist, since he is meeting similar economic problems every day. Suffice to say that needless duplication will be avoided by consolidation and the general overhead greatly reduced. The per capita cost of education will be much reduced.

Third—Uniformity. The standard of instruction would be more nearly uniform. With the great variety of good, bad, and indifferent colleges that we have today, unification is greatly needed.

Fourth—State laws are requiring our schools to meet certain definite standards. These cannot be met by the poorer schools, hence their fields of endeavor are necessarily limited. Consolidation will enable them to meet these standards.

Fifth—The profession as a whole would be benefited. The standard of our profession is reflected by our colleges. Good, efficient colleges indicate a profession of good standing, while second-rate "cram" schools indicate the opposite.

With all of these advantages to gain and practically nothing to lose, it seems to me that consolidation is the only logical course.

STANDARDIZATION OF DISPENSING PHARMACIES.*

BY L. E. SAYRE.

A few, rather trifling, incidents, have suggested the title to this paper. In a small city, something over 10,000 inhabitants, a surgeon wanted at once, for diagnostic purposes, in Roentgen ray work, some barium sulfate, specially prepared for the purpose. It is well known that this salt is now utilized in the process of "taking Roentgen ray pictures of the stomach and of the intestines," being prepared for that special purpose, free from soluble barium salts—a standard for it being described in New and Non-official Remedies.

Not one of the half dozen (or more) druggists knew of the salt. The physician was obliged to send away and wait several days for the article. Another physician

* Read before Section Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

wanted an ointment of the yellow oxide of mercury of odd strength. The clerk in the largest store announced that only one strength was in stock, showing the same, a ready-boxed, ready-to-use, original package; further stating: He was sorry he could not supply the odd strength required. It did not seem to occur to him that his confession placed him in a ridiculous position as a pharmacist. From the two physicians came the same lament: "It is a pity we cannot have at least one drug store, out of the many, that can supply all the needs of the practitioner." I suggested that it was perhaps as much the physicians' fault as the druggists' that more completely equipped and efficient pharmacies were not available—that perfect coöperation would do much to this end—that the physician often demanded unreasonable service, was free and inconsiderate in his criticisms and very indifferent in his patronage.

Many other instances, quite as trifling, perhaps, might be cited to support the contention that there is need of one real pharmacy in every town where now the deplorable lack of facility and pharmaceutical enterprise is so apparent. Now and then one finds a store simply masquerading as a drug store. I had at one time the odd experience of being in one of the latter. The pharmacist, so called, openly confessed that he used the name only for the purpose of exploiting sundries and other wares, carrying a minimum amount of drug stock—mostly package medicine. These lower types of drug stores make it difficult, of course, to support one of the higher type, and if the latter is maintaining a living existence, it is threatened with failure. Another hindrance to the ideal type is the Merchant's Licensed Drug Stocks. In Kansas the recent increase in the number of merchant's licenses for selling drugs of a specified class has been quite apparent. The mercantile element in the last legislature ventilated quite freely the legal restrictions surrounding drug dispensing. The attitude taken was very suggestive, namely, that it did not take a trained pharmacist to handle package medicine—that the average merchant was quite as competent as the trained pharmacist, who was clamoring for a monopoly of the business, to handle and sell package medicine, that now most of the important medicines were dispensed in original packages, etc. I have said that this attitude of the legislature, representing the people, is very suggestive as well as significant. This must be apparent to any one. Original package vendors are playing into the hands of these merchants, while the would-be pharmacist, clamoring for commercial pharmacy, sits idly by and does nothing to resist the current. Pure, unadulterated commercial pharmacy tends to put the pharmacist out of business.

I am reiterating what I have said before in this section when I say: It seems we have come to a time when not only the pharmacist should be standardized but the drug store as well. We have a fairly well-established standard for the pharmacist which the various state laws prescribe; now, it seems that constructive legislation would be in the direction of a standard for dispensing pharmacies. It should require a minimum, at least of stock, apparatus, etc., and should prescribe and define the conditions under which alone the dispensing of drugs may be recognized as legal—to be safe and correct. In some countries such legislation prevails. In one, legislation dictates that a licensed drug store should have, for example, a balance that will be delicate enough to weigh a milligramme. In Kansas, the only law, aiming to differentiate the real from the spurious pharmacy, was based

upon the amount of drug stock. This, crude as it was, served, in its enforcement, to put many masqueraders out of business. It is important for the younger generation to realize that this is a work largely in their hands to carry on. They will appreciate the helpful coöperation of physicians, which it would seem not difficult to obtain. If these two work together seriously and in sympathy there is no reason why the end above indicated should not be finally obtained.

I am encouraged to believe that the younger generation are beginning to realize that they have before them important constructive work for pharmacy. That they have begun to comprehend this is shown by their expressions. One of this group gave an address in one of the pharmaceutical meetings of the west a few months ago in which he expressed emphatically that it is now high time for the younger graduates in pharmacy to assert themselves in the direction of building for the betterment of our vocation. Mr. P. A. Mandabach, secretary-treasurer of the National Drug Clerks' Association—under the caption of: "Bring Pharmacy into Its Own"—points to the fact that the constructive idea is uppermost in the drug clerk fraternity. Let us hope it is. Mr. Mandabach, in his article, suggests a code of ethics. In section 7, he declares that in recognizing the dignity of the profession: "Those who follow Pharmacy must be educated to a higher degree, etc." I would suggest an addition to this code (section 7) that those who follow pharmacy should meet, in their establishments, a certain standard in equipment and maintenance of the dispensing department of drug stores. As a consequence we would have then at least one dependable pharmacy in every village of any size.

SOME BOSTON DRUGGISTS OF FIFTY YEARS AGO.*

BY E. L. PATCH, BOSTON, MASS.

Emery Souther opened his store on the corner of Green St. and Lyman Place in 1845. One of the principal features of his announcement was a page given to the merits of leeches imported direct from Smyrna, applied personally by a representative of the store at any time.

He also featured among other things Pure Drugs, Medicines, Chemicals, Perfumes, Tooth, Nail and Hair Brushes, Physicians' Prescriptions, and Soda Water.

He had learned the business with James Fowle, corner of Leverett and Green Sts. For the first year he was obliged to pay a stipulated sum for the privilege of apprenticeship. For the next three years he worked for his board, sleeping in the cellar with the rats.

At this time he came in contact with many of the old citizens of the town. He had frequent talks with Major Thomas Mellville about his part in throwing the tea overboard in Boston Harbor. Major Mellville had quite a sample of the tea which had lodged in his shoes. This he kept as a souvenir.

He was also entertained by many of the Major's stories of fire fighting. He was one of the volunteer fire fighters, and kept up his interest until he was 81 years of age.

* Reminiscences by the author, presented by request at the City of Washington meeting, A. Ph. A., 1920; the author was president of the ASSOCIATION in 1893, and became a member in 1872.

Mr. Souther told of an exhibition given in Bowdoin Square to prove the possibility of burning coal instead of wood. Before a large crowd, masses of coal were ignited in a sheet iron frame. He was the pioneer in the introduction of rectified Cod Liver Oil for medicinal purposes. He had a refinery at Chatham, Mass., and shipped quantities to New York. Later on he entered into some arrangement with New York dealers, through which he lost control of the plant. He also featured a medicated Cod Liver Oil candy, which he recommended for coughs, colds and relief of phthisis.

Mr. Souther had the old roster of the Derne Street School, which gave the standing and scholarship of several old Bostonians. In 1828 Wm. M. Evarts led his class with a mark A-1. He seemed to have maintained this prestige throughout his professional career as a New York lawyer, and as Secretary of State under President Rutherford B. Hayes. Charles Sumner had good marks, but not quite as good as Evarts'.

Mr. Souther remained in the Lyman Place Store 40 years. When the building was torn down on account of street widening, he was obliged to re-locate at 67 Green Street. Later on Staniford Street was widened, and he removed to the corner of Green and Staniford Sts.

When the writer first came to Boston, about 50 years ago, beyond Mr. Souther's store on Green Street was the Sampson Mansion, some distance back from the street, with a fine garden and orchard in front of it. At the lower end of Green Street, near the corner of Chambers Street on the left hand side, was a sizable orchard. Opposite the Sampson Mansion was a large church, which was afterwards converted into a box factory.

Mr. Souther was original in fitting up the store. It had many peculiar features. For gas fixtures, he had solid brass brackets, 15 to 18″ long, projecting from the wall. They were original in design, consisting of flying dragons with the gas jets projecting from their mouths. They weigh about 10 pounds and are now doing duty as electric fixtures in the home of one of his sons.

Mr. Souther took great pride in his business, and was a recognized authority by the older physicians of the West End.

SAMUEL M. COLCORD.

One of my earliest acquaintances in Boston was Mr. Samuel M. Colcord, then of Carter, Colcord and Preston, wholesale druggists, Hanover Street.

I was sent to the store for goods. While waiting, an elderly gentleman approached me and called my attention to cases of cardamoms and rhubarb that occupied the center of the store. I was a little in doubt as to whether he had an interest in imparting information to a green country boy or was amusing himself at my expense. A little later I learned from the prospectus of the Massachusetts College of Pharmacy at which I matriculated that he was president of the institution. Then I learned that his knowledge of drugs was very extensive and that his interest in that direction had led him with a few others to organize the American Pharmaceutical Association in 1851, that he was a past-president and past-treasurer.

The firm of Carter, Colcord and Preston dissolved, Mr. Carter forming a co-partnership with Mr. Wiley and Mr. Colcord entering the firm of T. Metcalf & Co.

He maintained the interest he had early taken in me, and I came to know him well and to admire him for his kindness of heart, his fixity of purpose and his high ideals in relation to pharmacy.

He told me of the bad condition of the drug market, the flood of inferior drugs and preparations and the total lack of standards which led a few men to organize to bring about a better state of things.

He was a great admirer of Wm. Procter, Jr. and Dr. E. R. Squibb and was eloquent in their praise.

I remember with what concern I went before Mr. Colcord and his associates on the Board of Trustees for my final oral examination for my diploma. I recall Mr. Colcord, Henry W. Lincoln, Charles A. Tufts, Geo. F. H. Markoe, James S. Melvin, Joel S. Orne, S. A. D. Sheppard, Thomas Hollis, and B. F. Stacey. I was questioned for nearly two hours upon my thesis, prescription terms and methods of compounding, synonyms, chemical and pharmaceutical problems, and Mr. Colcord finally wound up by asking for definitions of Mercurius dulcis, Turlington's Balsam, Trooper's Ointment, Iron Ball, White Precipitate, Red Precipitate, Flake White and others of a long list.

I could see that he dominated the Board of Trustees and his opinion counted for much. S. A. D. Sheppard acted as secretary and I was quite amused later at reading a copy of his records.

Every member of the Board of Trustees named above was a member of the American Pharmaceutical Association and the list includes four presidents, three vice-presidents and three treasurers.

Mr. Colcord was such an earnest, loyal advocate of the Association, one could not be long associated with him without becoming a member. I believe his conscious and unconscious influence was a powerful factor in the development of pharmaceutical progress.

COL. ORMAND F. NIMS.

One of the most remarkable of the Boston Druggists I knew fifty years ago was Col. Ormand F. Nims, whose store was on Cambridge Street. I had read of his wonderful career as commander of Nims' famous light battery in the Civil War, and looked up to him with reverence.

My acquaintance with him was very pleasant, and I felt honored when he visited me in my office and chatted of the old days. If I remember correctly, he was ninety-four years of age the last time he called. He purchased quite an order of pharmaceuticals, insisted upon paying cash, and took them home himself. He was the most perfect illustration of independence and quick, positive decision that I ever met.

Eight days after receiving the call to service he had turned over his business to the lady who was to be his wife, and was on the way to the front. For three years and five months he commanded the battery upon many a hotly contested field and was always there with the goods. His place in American history is secure. Later he was attached to the quartermaster's department at New Orleans and made as fine a record purchasing steam fire engines, copper sheathing for ships, and other supplies, including hospital requisites, as he had made on the battlefield.

On returning to Boston, he took charge of his old store. He discontinued

the sale of patent medicines, soda water, cigars and liquors. He declared that he would not sell rum for a thousand dollars a minute.

His store had the same old fixtures and implements which it was equipped with in 1857. It was painted white, and he boasted that it had not been repainted since it was opened. He cleaned the paint from time to time, and always kept the store immaculately clean.

I am sorry that I did not make a note of some of the incidents of his Civil War career which he was coaxed into telling occasionally. He was a good "old school" pharmacist, and a grand specimen of a man.

Not having cigars in stock, a large sign in the rear of the store reading "No Smoking in This Store" did not embarrass him as a similar sign did a druggist who sold cigars.

DANIEL HENCHMAN.

On the opposite side of Cambridge Street a little above Colonel Nims' store was one of the old landmarks, the store of Daniel Henchman. It was an old building, and fitted up in the old style. Instead of modern balances he used the old-fashioned beam scales; those used for selling being very large and occupying a large space on the counter. Instead of the modern shelf bottles, he used the old fashioned containers of light blue earthenware. His herbs and drugs were kept in jars with a metal cover. The syrups were kept in urns with a metal cover and side outlets from which to pour them. We have in our possession samples of the old shelf ware which he used.

Mr. Henchman was well known to all the older dwellers of the West End. He was a fine looking old gentleman, somewhere about 75 or 80 years of age. He told us of his early manhood when he was condemned to die of tuberculosis. Calling attention to his ruddy cheeks, his fine build, and his activity at his time of life, he would ask if it was possible for us to believe that he had passed through such an experience.

Further down Cambridge St. on the right hand side at the corner of North Grove St. was a store kept by George Colton, a gentleman rather past middle life, and a very conscientious druggist, keeping a neat and carefully conducted store. Just below his store at the foot of North Grove St. was the old Harvard Medical School, an ancient structure that was no credit to the University. Students were admitted from high school or upon an examination equivalent to high school graduation, and graduation followed a three years' course. There were a great many students from the country and Provinces. In showing a stranger about the building, the things that were principally interesting to the students were the scene of the murder of Prof. Parkman by Prof. Webster, and the various places where portions of the body were disposed of. We remember attending an interesting lecture by Prof. Oliver Wendell Holmes upon the anatomy of the eye, illustrated with specimens passed around the class.

The comparison of this old building with the wonderful collection of buildings at present occupied by the Medical School on Huntington Ave. with their extensive equipment for instruction, and a comparison of the requirements for admission and graduation with those of the present-day calling for an A.B. degree for entrance and four years' extended course of instruction with a very broad op-

portunity for clinical experience, for graduation, is a fair type of the progress that has been made in professional instruction during the last fifty years.

At the corner of Cambridge St. and Blossom St. was a store that had been kept formerly by an Englishman, Mr. Butterworth. We had an opportunity fifty years ago of looking over his sales record during the period of the Civil War, when it was not uncommon for this corner drug store to have sales of $200.00 to $300.00 a day. There were entries like the following:

1—Bottle Lubin's Perfume	1.25
1—Cake Lubin's Soap	0.75
1—Package Lubin's Powder	0.35
1—Hair Brush	2.50
1—Hand Mirror	2.00
1—Buffalo Horn Comb	1.25

In those days a druggist did not have to compete with department stores, chain stores, or cut prices.

FORWARD, NOW, TOGETHER!

A Message From the Associated Advertising Clubs of the World.

The time has come for all of us in America to move forward—unitedly and with determination—into an era of sound prosperity.

We are due to come into our own. Now is none too soon.

We must make up our minds to go ahead—flash this signal all along the line.

The way is open if our will is strong.

The wheels of industry will turn in response to our commands, expressed in terms of action.

It is up to you, to all of us, to say the right word and do the right thing to stabilize business. Stability waits on activity plus faith that all is well—faith in ourselves, in one another, in business.

Faith is the very foundation of prosperity. Make it the cornerstone of your thinking and of your action.

To-day, let us start putting our shoulders to the wheel, all together. Let us work a little more, think a little harder, buy without forebodings—and sell with a conscience. We must keep a clear eye out for the other fellow's interests as well as our own.

The one rule that assures a full measure of prosperity is the Golden Rule. It is simple, sure, safe. Work this rule and let it rule your work.

Some say there has been a breaking down of faith by the recent scramble to "get while getting is good." Even if that is so, we must dismiss from our minds that phase of reaction from war endeavors and declare for new, high standards.

Nothing tangible is holding us back. The fundamental factors making for prosperity are all favorable.

At core American business is solid.

At heart American men and women are courageous.

We must show the world, each other, ourselves, what American spirit really means.

Forward, now, together, confidently!

The message is printed because it is timely, and a number of the thoughts are applicable to Association work.

JUNIOR PHARMACOLOGIST EXAMINATION.

The United States Civil Service Commission announces an open competitive examination for junior pharmacologist. A vacancy in the Hygienic Laboratory, Public Health Service, Washington, D. C., and vacancies in positions requiring similar qualifications, at $1,500 to $2,000 a year, or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Application should be made before April 5, on Form 1312, to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone; or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

DEPARTMENT OF COMMERCIAL INTERESTS

CONDUCTED BY DR. ROBERT P. FISCHELIS.

It is the desire of the editor of THIS JOURNAL and the writer of this page that the membership of the AMERICAN PHARMACEUTICAL ASSOCIATION take an active part in making the Department of Commercial Interests of value to all our readers. We would appreciate comment on the topics that have been discussed thus far and, in fact, we hope that the members of the ASSOCIATION will feel free to voice their opinions on subjects of commercial interest through this Department at any time.

At the Founder's Day celebration of the Philadelphia College of Pharmacy held on the one hundredth anniversary of the founding of that institution, February 23, 1921, Dr. H. V Arny, of New York, addressed those assembled on the subject: "The Pharmacy of One Hundred Years Ago and of To-day." In this splendid address he drew the following comparison between the pharmacy of to-day and one hundred years ago: "While pharmacy of 1821 was the art of compounding medicaments and the sale thereof, the pharmacy of 1921, the age of machine-made goods, is largely the art (or science if you will) of salesmanship, the distribution of the products of other men's hands. Deplore it as we will, the machine has largely replaced the man in our calling, as in many others. The druggist of 1821 was a merchant of standing who served his customers with products made in the back room of his store, and in many cases that back room between now and then has grown into a huge factory. The pharmacist of 1921 has four ways in which he may utilize his training; (*a*) he may be a clerk in a corporation drug store; (*b*) he may be a proprietor of a commercial store where salesmanship is the keynote, even as it is in the corporation store; (*c*) he may become a prescription specialist to whom physicians turn for expert advice, even as the physicians of 1821 turned to Marshall, to Milhau, to Durand and to Ducatel; (*d*) he may be a trained pharmaceutical chemist or pharmacognosist employed in a manufacturing plant."

Let us analyze this statement for a moment. Is there, after all, so much difference, fundamentally, between what are now considered the "good old days" in pharmacy and the pharmacy of 1921?

The only real difference is the existence of the pharmaceutical manufacturing house, a factor which did not enter into the consideration of the pharmacy of 1821.

A span of one hundred years has not altered the fact that the pharmacist occupies the dual position of tradesman and professional man. Specialization has left its mark on pharmacy, as it has on every other profession or trade during the past century. In 1821, Philadelphia was a city of 137,000 population and New York trailed behind with 123,000 and Chicago consisted of a few shacks around Fort Dearborn. To-day these three cities and their suburbs alone represent a population of over 15,000,000. Is it any wonder that the drug store, in

endeavoring to serve such densely populated communities, has changed from the old apothecary shop to the modern store with its fine fixtures and bright lights?

The drug store, because of keen competition, has kept pace with the demands of the times and, in providing the many service features now expected by the public, it has had to cast about for means of maintaining itself. Drugs, theoretically, are used only by the sick. Except in times of epidemics, the demand for medicines would not be sufficient to keep very many drug stores running as private enterprises. People would raise a howl if they had to walk or even ride a mile or two to the nearest pharmacy for their medicines. Hence, the drug store, in order to be convenient to a large community in time of sickness, must support itself by the sale of other goods which that community may need or can be persuaded to buy there. The modern drug store, which some of our brethren look upon with disdain, is not the realization of some business man's dream. It is a product of the evolution of the American city and the demands for service on the part of its inhabitants.

The pharmacist who graduates from a good college to-day knows a great deal more about pharmacy than did the apothecary of 1821, but he does not have as much opportunity to practice what he has been taught. In 1821 the pharmacist was his own manufacturer in addition to being a distributor. In 1921, manufacturing is a very small part of his function. He is more of a distributor of manufactured products but he still compounds prescriptions. The trend of the times is toward the elimination of the small manufacturer. Shoes are no longer made to order by the old shoemaker; furniture is no longer made to order by the small cabinet maker; ready-made clothes have reduced the tailor to a mender and presser, and drug products are made on a large scale by the big manufacturing houses. There are, of course, exceptions to all the cases cited, but by far the largest portion of the demand for the necessities of life which require manufacturing, is the product of large-scale operations.

Rather than limiting the opportunities of those who want to continue their trade or profession as manufacturers of any of the products referred to above, this modern condition of affairs gives them an opportunity to specialize and make themselves indispensable to the manufacturing concerns who are supplying the demand for their wares.

A noted shoe manufacturer was recently told that a certain educational institution was about to turn out some men who had specialized on shoe manufacturing and expected to enter his employ as specialists in that field. He answered to this effect: "I have no use for specialists in shoe manufacturing. What I want is specialists in any one of the forty-two items and operations that enter into the production of a shoe. The man who has made or will make an intensive study of eyelets, for example, and all the problems connected with the selection of proper metal, proper insertion, devise labor-saving methods of inserting them, etc., is one who will become indispensable to this business. He cannot become expert in all of the forty-two items because he won't live long enough." So it is with pharmaceutical manufacturing. The man who wants to do manufacturing and loves manufacturing problems will have endless opportunity in our large drug concerns.

On the other hand, the man who wants a business of his own and goes into

the retail drug business has his choice of locating where a strictly prescription pharmacy will pay, or conducting a modern drug store with such side lines as are necessary to support it. It is a question of specialization and the graduate in pharmacy still has the opportunity and privilege of making his choice. The apothecary of 1821 had only one avenue open to him and he was able to do all that the pharmacy and medicine of that day required. The pharmacist of 1921 cannot be expert in all branches of the work which modern pharmacy and medicine are liable to send his way. He should have a fundamental knowledge of it all, but he must specialize either in merchandising, prescription compounding, manufacturing or medical laboratory work.

One hundred years have not passed without developing pharmacy, and the modern pharmacist himself is a part of that development. We may not like some phases of the development but we ought to face the facts.

DRUG CLERKS, UNIONS AND STRIKES.*

BY JOHN CULLEY, OGDEN, UTAH.

[Editor's Note.—As an introductory to his paper the author discussed labor organizations and the methods pursued by them in carrying their plans of action into effect, and strikes play an important part. As the author states, we are mostly concerned with the relationship of these organizations to drug clerk activities, and that part of the paper follows.]

The great mass of people comprising this country's population may conveniently be divided into three general classes: Capitalists, professional men and laborers. A capitalist is one who owns bonds, has a savings account, shares of stock in a company, owns a business, no matter how large or small. Any one who uses his money to make more money is a capitalist. One who hires his fellow-men to work for him is a capitalist. The proprietor of a drug store is in that class. A laboring man therefore is one who works for another for a given wage. The professional class includes doctors, dentists, teachers, pharmacists, and, perhaps, men and women of a score of other vocations. I prefer to place the drug clerk in this professional class; technically, he may be laboring for another, but he is not paid for the actual work or labor performed, but his salary determined, more, by what he knows. He is, in fact, a working professional. The man in the professional class is not paid for the actual work he does, neither is he bound down to a specified number of hours, but his pay, his remuneration, is always based upon his knowledge of his chosen profession. The more he knows the more he will surely command. This applies to the drug clerk, the mining engineer, the physician, the teacher, the lawyer. If this were not so, why do some drug clerks command a higher wage than others, and why do some stores pay more than others? It is a matter of proficiency and knowledge, that's all. Drug clerks may join all the unions on earth, but that fact alone will never improve their condition in life or pave the way for advancement. They may work eight, six, or less hours per day, and four or five days per week, but it will

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* Part of a paper read before Section on Practical Pharmacy and Dispensing, A. Ph. A., City of Washington meeting, 1920.

not gain for them that which is most desired—better positions, managerships, or businesses of their own, and become proprietors, capitalists.

The normal ambition of a drug clerk is to become a proprietor. The right of ownership, of property, is with us fundamental, and, with the proper education, industry and thrift, there is no reason why every drug clerk should not enjoy this right.

A union slogan is "All men are born equal," and from that it is argued that all men should live under conditions of equality. I take issue with this slogan. All men are not born equal. The only equality of man is that of intellectuality, knowledge, spirituality and imagination. We do not possess them all to an equal degree and no union can give to a drug clerk these qualifications. But there is one thing that will give to the pharmacist this equality and that is, intelligent work. Mere work, however, that is, laboring for a few hours, so many days per week, as outlined by unions, may be the means to make a living, but that is all it will ever accomplish. To advance, one must inject into his work such peculiar and rare qualities as intellectuality, personality and individuality and love of the work one is doing. Make your vocation also your avocation. These are necessary qualities that no union can give, or even desire of its members. The very moment the drug clerk or any other working man uses his education and intelligence in his work and rises above his fellow workers, he ceases to be of value to the union. He is in line for promotion to more responsible positions and the union cannot hold him back. Analyze the career of any successful man and you will find that he has a very pronounced faculty and love for his work. He was not guided by union rules. The proprietor of a drug store who was formerly a drug clerk gave his employer full value received and then some. He did not work by the clock, but spent his spare time improving his knowledge, learning and doing things for his employer he was not exactly required to do—giving his employer extra service, and his pay was received in the extra knowledge and experience gained; when the opportunity arrived for bettering his condition he was fully prepared to grasp it, but it was not accomplished by union methods. The recent strikes of unionized drug clerks were failures, and no strike, of like character, will ever be a success for these reasons: The lack of equality, the desire of proprietorship and the love of the profession. There is said to be a panacea for all evils. The union of drug clerks with the Federation of Labor, with its resulting strikes and disturbances, is an evil that must end for the reasons heretofore mentioned, if we wish to succeed and be recognized as a profession; we cannot elevate ourselves to that standard by affiliating with labor unions.

My panacea for these troubles is a simple one and to the drug clerks I would say:

Work intelligently and always to the interest of your employer. Take yourself and your position seriously. Make yourself worth more to your employer by giving him your very best. Give him a profit on your services. If you are dissatisfied with your hours, your salary or other conditions, take your complaints direct to your employer, meeting him as man to man in a spirit of friendliness, respecting each other, rather than as opponents, and without animosity and distrust. When this is done, when proprietor and clerk meet in a friendly rather

than in a militant spirit, it will be possible to arrive at satisfactory terms and conditions, as neither party can prosper without the other.

Should a satisfactory conclusion not be arrived at, it is your privilege to resign and seek a position elsewhere and, if your contentions are right, you will not long remain out of a desirable position. Good men are always in great demand, and never idle. Lastly, associations of like interests are valuable to the members; therefore, join with your local and state pharmaceutical associations, take part in their deliberations; mingle with the proprietors on equal terms, and you will soon realize your ambition and be one of them.

AN EIGHT HOUR WORKING DAY IN PHARMACY.*

BY CORNELIUS OSSEWARD, SEATTLE, WASH.

There are several reasons, I believe, why an eight hour working day would be desirable; there are, however, certain reasons which make it an absolute necessity that the working hours in the pharmacies be shortened.

Look around and take note of the tremendous changes taking place; they are affecting you and me: they are changes which are requiring new methods in pharmacy as well as in other lines of endeavor. Look back, say, 15 or 20 years. What a difference in the methods employed at that time compared with the present-day methods of conducting a pharmacy. How little system, what poor methods, and how little real knowledge about the actual condition of the business did we have. To-day the successful store, the store that is doing the business, knows the facts; knows what is necessary, such as the cost of doing business, the percent of expense, profit, and turnovers.

And yet with all his business knowledge, his cleverness in improvement, the most important problem has been left untouched, the problem which to my mind will, if properly handled, produce more real results and give more lasting benefit to pharmacy than anything else. IT IS THE LONG HOUR PROBLEM.

The pharmacist has been, and still is, in the habit of working overtime. Is there any good reason why he should continue to do so indefinitely? Is there no way by which he can arrange his business methods so that he, too, may enjoy some time with his family, so he, too, may have the same privileges as his friend and neighbor, the shoe dealer or the drygoods man?

It is not so many years ago that this same shoe dealer exclaimed "impossible," when shorter hours were demanded of him, and yet to-day with up-to-date methods he is selling more goods in eight hours than he formerly sold in ten. He has forgotten the past, he is living in and enjoying the present, and he is physically in better shape to look after his affairs, because his hours of work are shorter.

To consider an eight hour working day in pharmacy we must do as the shoe dealer, get away from the past, think only of the present, consider present conditions, study these conditions and see if there is not some way by which we, too, can do the amount of business in eight hours which is taking us 12 and 14 hours to-day.

This of course you cannot do alone; it will require competent help, and competent help is our most difficult problem to-day. You cannot do a large business

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., City of Washington meeting, 1920.

unless you have the right kind of help, no matter how successful an organizer you may be; or if in addition you are a master in detail, and financially safe and successful; your business ideas may be clever and original, and yet would bring you but little success, unless your ideas were carried out according to your plans.

You cannot deny the fact that the clerk you employ is an important part of your business; that it will be the very best policy from a business standpoint to look after his best interests, for in this particular part of your business you cannot afford any friction. To-day this is without doubt our greatest worry; it is the problem which has not been looked after; the most important link in your chain is the weakest, and you have lost sight of the fact that the chain is only as strong as its weakest link.

In order to get 100% efficiency you must have 100% efficient clerks, and a dissatisfied clerk cannot be 100% efficient. Recent happenings have demonstrated only too clearly the great amount of dissatisfaction and unrest among our employees, and do not forget that the unrest is still there, the dissatisfaction has not been removed. Do you think it good policy to allow this condition to continue? Can you expect efficiency and interest, while we are working under such tremendous disadvantages?

Why not give your employee an eight hour working day, a good salary, and, when 100% efficiency is shown, also part of the profits? The farmer knows that unless he fertilizes his soil constantly it will soon cease to produce crops; he therefore returns some of his profits in the shape of fertilizer, in order that large returns may continue.

We cannot afford to have shorter hours forced upon us by any outsider; it will pay us much better if we bring about this condition ourselves; the eight hour day is coming sooner or later—we can't escape it; why not try it before we are forced to it?

We have considered this problem in our store from a purely business standpoint; we figure that by working our force eight hours a day they are in better shape to produce, there is more efficiency, more willingness, more interest. For nearly two years our store has been conducted under an eight hour working day, except that each clerk works eight hours every third Sunday. My employees are slowly but surely commencing to realize that it is their move now, that it is for them to produce results, in order that the eight hour day may continue. They are beginning to realize that efficiency is needed to produce financial results.

If we wish pharmacy to continue, if we do not care to be without clerks, we must get in line for an eight hour working day in pharmacy, for it is only in a reduction of working hours that we can expect to get the right kind of young men interested in pharmacy, and only under such favorable conditions can we expect to keep them.

So much for the employee. What about the employer? We as employers have been even more neglectful about our own time; we have been slaves to our business—our business has been running us.

If you wish to shorten your working hours, you must first shorten the hours of your employee; get him satisfied, get the unrest out of his system, get him in shape for 100% efficiency, then (and only then) he will be in condition to help you shorten your hours.

In order to shorten your hours it may be necessary to go over your business, department by department, searching out better methods, installing up-to-date systems, making more records, in fact, doing everything that will tell you how your business stands, what your percent of expense is, percent of profit, the condition of your stock, and your turnovers. In this work you will need assistance. Would not the satisfied clerk be the most efficient? He is the man who works with his head as well as with his hands, for his mind is on his work instead of on his dissatisfied condition.

What we need mostly in pharmacy today is

Satisfied Clerks.
Efficient Clerks.
Willing Clerks.
Clerks who will look after our interests.

Shorter hours will do this; put your clerks under the same working conditions as the drygoods clerk, and I am sure many of your troubles will disappear.

There is one more question. What about these evenings—the time that rightfully belongs to your family? What about these evenings—the time that rightfully belongs to your clerk's family? No matter what success you may attain in your business, if you have to get it at the expense of your home life, I say to you the cost is too high, the value received too low.

PURE SKUNK FAT.

BY J. M. ANDERSON AND E. C. MERRILL.

About a year ago, in connection with some work in this department, it was desirable to know the analytical constants of the pure fat of the skunk (*Mephitis mesomelas* Licht). A search of the literature at that time being fruitless, an authentic sample of the fat was obtained from a freshly killed animal and rendered in the laboratory at a low temperature. Inasmuch as there appears to be no previous record of these analytical constants in the literature, the following results which were obtained are submitted for purposes of record.

The oil obtained was a pale yellow oily liquid at 25° C. After standing for a time at room temperature, a large amount of semi-solid fat precipitated. When chilled to 13° C. it entirely congealed. It had a characteristic odor and an acrid bitter taste. It possessed the following constants:

Specific gravity at 40° C.	0.91107	Unsaponifiable matter	0.25%
Solidification point	13° C.	Soluble acids	0.544%
Hehner value	95.26		
Saponification value	197.74	MIXED FATTY ACIDS.	
Iodine value	82.44	Melting point	33° C.
Acid value	3.61	Acid value	202.01
Acetyl value	10.98	Iodine value	79.62
Refractive index at 40° C.	1.4610	Refractive index at 40° C.	1.4510

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BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Conducted by H. V. Arny, Reporter on the Progress of Pharmacy, Chairman of the Committee on Research.

On these pages, each month, will be found a list of articles on pharmaceutical research that appear in the pharmaceutical and other scientific journals of the world. Whenever possible, the list appearing a certain month will record articles appearing in American journals of the preceding month and articles appearing in foreign journals will be recorded as quickly as possible after the journals reach the Reporter.

All articles appearing in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which will be issued as soon after the end of the year represented as editing and printing conditions permit. Those desiring abstracts immediately can obtain same for a fee of one dollar each by communicating with H. V. Arny, 115 West 68th St., New York, and arrangements can also be made for securing photographic reproduction of entire articles at moderate prices when such are desired.

APPARATUS AND MANIPULATIONS.

Connell, V. B.
Simple hydrogen sulphide generator
Pharm. J., 106 (Jan. 8, 1921), 17

Fresenius and Grünhut
Preparing red litmus paper
Z. anal. Chem.; through *Drug. Circ.*, 65 (Feb. 1921), 61

Noble, John
Incompatible hydrocyanic acid, iodine mixture
Chem. & Drug., Jan. 29, 1921, 151

Watson, H. E.
Automatic separator in volatile oil distillation
J. Indian. Inst. Sci., 40 (Jan. 15, 1921), 26A

PHARMACEUTICAL PREPARATIONS.

Anon
A stable cerate base
Schweiz. Apoth.-Ztg., 59 (Jan. 6, 1921), 14

Chataigner
Assay of kermes mineral in tablets
Bull. soc. pharm. Bordeaux; through *Drug. Circ.*, 65 (Feb. 1921), 61

Knight, W. A.
Aspirin tablets
Chem. & Drug, 94 (Jan. 8, 1921), 55

Marie and Boultier
Extract of suprarenal glands
Bull. gen. Therap.; through *Pharm. J.*, 106 (Jan. 29, 1921), 70

Power, F. B.
Detecting methyl anthranilate in fruit juices
J. Am. Chem. Soc., 43 (Feb. 1921), 377

GENERAL BOTANY AND BACTERIOLOGY.

Galippe, V.
Living organisms from fossils
Comptes rend.; through *Pharm. J.*, 106 (Jan. 29, 1921), 70

THERAPEUTICS AND NEW REMEDIES.

Bedall, A. J.
Numoquin in eye troubles
J. Am. Med. Assoc.; through *Merck's Rept.*, 30 (Jan. 1921), 15

Buerge, E.
Phyllosan
Merck's Rept., 30 (Jan. 1921), 5

Malgoyre, J.
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Bull. soc. pharm. Bordeaux; through *J. pharm. chim.*, 22 (Dec. 16, 1920), 467

VEGETABLE AND ANIMAL MATERIA MEDICA.

Anon
Detecting abnormal milk
Merck's Rept., 30 (Jan. 1921), 6

Faust, E.
Properties of cobra venom
Australasian J. Pharm.; through *Pharm. Era*, 54 (Feb. 1921), 45.

Fowler, G. J., and co-workers
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J. Indian. Inst. Sci.; through *J. Soc. Chem. Ind.*, 40 (Jan. 15, 1921), 22A

Greenish, H. G., and Pearson, C. E.
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Holmes, E. M.
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Lloyd, J. U.
Spiders in medicine
Am. J. Pharm., 93 (Jan. 1921), 19
Lloyd, J. U.
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Eclectic Med. J.; through *Am. J. Pharm.*, 92 (Jan. 1921), 40
McCutcheon, A.
Cascara sagrada grown in Scotland
Chem. & Drug., 94 (Jan. 29, 1921), 151
Maldomardo,
"Peru benzoin"
Boletin Farm. Lima; through *Pharm. Era*, 54 (Feb. 1921), 66
Newcomb, E. L., and Smithe, C. E.
Revising standards for hydrastis
N. W. Drug., 29 (Feb. 1921), 60
Perrot
Egyptian drugs
Chem. & Drug., 94 (Jan. 8, 1921), 37
Rosenthaler, L.
Hydrocyanic acid content of cherry laurel leaves
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Sluijters, A.
The Hatcher cat method of digitalis assay
Pharm. Weekbl., 58 (Jan. 29, 1921), 140
Zellner, J.
Latex of *Lactarius vellereus*
Z. physiol. Chem.; through *J. Soc. Chem. Ind.*, 40 (Jan. 31, 1921), 60A

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Bruhns
Influence of air in alkalimetry
Z. Zuckerind. Czecho-Slov; through *Drug.Circ.*, 65 (Feb. 1921), 62
Kolthoff, I. M.
Adsorption of alkali and alkaloidal salts by filter paper
Pharm. Weekbl., 58 (Jan. 22, 1921), 94
Kolthoff, I. M.
Adsorption of alkalies by cellulose
Pharm. Weekbl., 58 (Jan. 15, 1921), 46

INORGANIC CHEMICALS.

Éwe, G. E., and Gloor, F.
Practical assay of zinc salts
J. Am. Pharm. Assoc., 10 (Feb. 1921), 101
Fleury, P.
Decomposition of alkaline sodium hydrobromite by copper sulphate
J. pharm. chim., 22 (Dec. 16, 1920), 449
Klein, F.
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Pract. Drug., 39 (Feb. 1, 1921), 38
Renneboog, V.
Therapeutic value of radium
J. Pharm. Belg.; through *Pharm. Era*, 54 (Feb. 1921), 40
Schoorl, N., and Kolthoff, N.
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Chem. Weekbl.; through *J. Soc. Chem. Ind.*, 40 (Jan. 15, 1921), 29A
Stout, H.
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Chem. Age; through *Merck's Rept.*, 30 (Jan. 1921), 8
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Bottlenose oil
Chem. Rundschau; through *Drug. Circ.*, 65 (Feb. 1921), 61
Feulgen, R.
Preparation of nucleic acids
Z. physiol. Chem.; through *J. Soc. Chem. Ind.*, 40 (Jan. 31, 1921), 60A
Goldschmidt and Kuhn
Death from methyl bromide fumes
Zent. Gewerbehygiene; through *Am. J. Pharm.*, 93 (Jan. 1921), 59
Hammarsten, O.
Preparation of pure stomach enzymes
Z. physiol. Chem.; through *J. Soc. Chem. Ind.*, 40 (Jan. 31, 1921), 57A
Henry, T. A.
Chaulmoogra oil
J. Trop. Med. and Hygiene; through *J. Soc. Chem. Ind.*, 40 (Jan. 15, 1921), 13R
Johnson, T. B., and Lane, F. W.
Alkyl derivatives of resorcinol and their antiseptic value
J. Am. Chem. Soc., 43 (Feb. 1921), 348

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Hydrolysis of the globulin of coconut
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Kamm, Oliver
Structure and pharmacology of alcohols
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Macht, D. I.
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Phytochemical notes
Ber.; through *J. Soc. Chem. Ind.*, 40 (Jan. 15, 1921), 24A
White, Paul
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Haas
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Kramer, B.
Assay of potassium and sodium in small quantities of blood
J. Biol. Chem.; through *Pharm. Weekbl.*, 58 (Jan. 22, 1921), 102

Terry, B. T.
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J. Am. Med. Assoc.; through *Merck's Rept.*, 30 (Jan. 1921), 15

Thieulin, R.
Urinary elimination of novocaine and similar synthetics
J. pharm. chim., 22 (Dec. 16, 1920), 463

MISCELLANEOUS.

Guillaumi
Elinvar, a new alloy
Chem. Age; through *Merck's Rept.*, 30 (Jan. 1921), 7

BRITISH PHARMACEUTICAL CONFERENCE RESEARCH LIST FOR 1919–1920.

The following list is from the British Year Book of 1920. Some of the subjects will, undoubtedly, be suggestive for research work. The Year Book references are to those of the British Pharmaceutical Conference, and titles of the British Pharmacopoeia.

Acetylsalicylates.—Which is the most suitable salt for pharmaceutical purposes? Do the salts possess any advantages over acetylsalicylic acid? (See *Y. B.*, 1908, 237; 1909, 109; 1911, 215; 1912, 227, 230; 1917, 117.)

Apiol.—A formula for the preparation of a standard product is required (see *Gen. Index* and *Y. B.*, 1905, 23; 1907, 187; 1909, 100; 1910, 142; 1913, 285; 1914, 125).

Assay Processes (Pharmacopoeial).—Improved methods for the assay of several B. P. chemical products are needed. *Examples:* Liquor Formaldehydi, Sodii Arsenas Anhydrosus, Hexamine.

Belladonna Root (Indian).—Parcels of this drug have given abnormal figures on analysis, indicating the presence of some base of a lower molecular weight than atropine. An investigation of this drug is required (see *Y. B.*, 1913, 267; 1915, 217; 1917, 195; 1919, 210).

Bismuth Phenate.—An examination of commercial samples would be of interest (see *Gen. Index*).

Calx Sulphurata.—An examination of the processes of manufacture and the purity of commercial samples is needed.

Cannabis Indica.—The physical characters and therapeutic value of the official preparations are stated to be liable to considerable variation. An investigation is required to determine whether any chemical standard is possible, and, if not, whether physiological tests should be introduced. A report on the comparative values of the official Indian drug and those varieties produced in Goa, Africa, America, and Greece, is desirable (see *Gen. Index* and *Y. B.*, 1908, 40, 229; 1909, 43, 110, 240; 1910, 143; 1911, 163; 1912, 247, 266; 1913, 263, 264; 1915, 227; 1917, 218, 271; 1918, 229; 1919, 212).

Casein Foods.—A comparative examination of the so-called "Foods" or "Nerve Tonics" of the type represented by the combination of soluble casein and glycerophosphates, etc., would be useful (see *Gen. Index* and *Y. B.*, 1915, 241; 1918, 369).

Casein (Soluble).—Details of improved processes for the preparation of soluble casein are required.

Coloring Agents.—An investigation with a view to determining the most suitable coloring agents for syrups, such as *Syrup. Glycerophosph. Co.*, and other galenicals, is needed.

Cinchona, Liquid Extract of.—The B. P. process does not fully extract the total alkaloids from cinchona bark. An improved process is required and experiments are needed to ascertain the best solvent for the purpose (see *Y. B.*, 1917, 387).

Deterioration.—Some drugs, chemicals, and preparations are subject to deterioration upon storage. An investigation should be undertaken with the view to recording the extent to which such articles can be kept in a pharmacy in normal conditions and for a reasonable length of time and yet comply with the B. P. requirements (*e. g.*, magnesia, ammonium carbonate).

Drugs.—The following drugs require further systematic chemical investigation: *Adonis vernalis* and *Adonis aestivalis* (see *Gen. Index* and *Y. B.*, 1913, 132, 295; 1916, 3; 1918, 227), *Cereus Cactus grandiflorus* (see *Gen. Index* and *Y. B.*, 1910, 209; 1911, 240; 1916, 287), *Cassia fistula, Serenoa serrulata* (see *Gen. Index* and *Y. B.*, 1917, 160, 344), *Arnica montana* (see *Gen. Index* and *Y. B.*, 1904, 27), *Monsonia ovata, Monsonia biflora* (see *Gen. Index*), *Thuja occidentalis* (see *Gen. Index* and *Y. B.*, 1911, 117; 1914, 45, 367), *Tanacetum vulgare* (see *Gen. Index and Y. B.*, 1910, 173), *Senecio Jacobea* (see *Gen. Index and Y. B.*, 1912, 279; 1916, 226; 1918, 238), *Achillea millefolium* (see *Gen. Index and Y. B.*, 1908, 5; 1918, 62), *Aletris farinosa* (see *Gen. Index* and *Y.B.*, 1911, 220; 1915, 225; 1918, 228), *Rhamnus purshianus* (see *Gen. Index* and *Y. B.*, 1916, 204, 270; 1917, 206, 208, 212; 1918, 190),

Polygala Senega (see *Gen. Index* and *Y. B.*, 1906, 217; 1909, 123; 1916, 381), *Tussilago Farfara, Chondodendron tomentosum* (see *Gen. Index* and *Y. B.*, 1907, 120; 1912, 32; 1913, 27; 1916, 367; 1918, 231).

Ergot.—A reinvestigation of the pharmacy of this drug in the light of recent chemical work is required, and a method of determining the activity of the galenical preparations (see *Gen. Index* and *Y. B.*, 1914, 8; 1915, 234).

Ferments.—The action of ferments in inducing changes in galenical preparations might be studied.

Formulae.—Improved formulae are required for the administration of nauseous drugs (*e. g.*, Paraldehyde, Male Fern).

Galenicals.—Investigation is required of the changes in the strength of galenicals, etc., during preparation and on keeping, which may render the original formula an unfair criterion of the finished product, *e. g.*, loss of ammonia in filtering Tinct. Quininae Ammoniata; loss of formaldehyde from the tablets; loss of iodine in making Syrup. Ferri Iodidi.

Galenicals.—The B. P. 1914 has introduced in a few cases tests for galenical preparations (*e. g., Acetum Scilla*). An investigation is needed with a view to ascertaining how far the specific gravity and other physical constants may be considered to be a fair criterion that a galenical has been made in accordance with the B. P. directions.

Hydrargyrum c. Creta.—The conditions under which the volatilization of mercury from wrapped powders of *Hydrarg. c. Creta* is liable to take place.

Iron, Determination of.—A quick method is wanted for the determination of iron in Syrup. Ferri Phosph., Syrup. Ferri Phosph. Co., Syrup. Ferri Phosph. c. Quinin. et Strych., and Syrup. Hypophosph. Co. (see *Y. B.*, 1914, 393).

Jalap, Brazilian.—A microscopical investigation of this root is required, with the object of enabling the admixture of it with powdered jalap to be detected. A test is also required for detecting the addition of its resin to true jalap resin (see *Y. B.*, 1916, 255; 1919, 217).

Morphine.—Can the process described in *Y. B.*, 1907, 107, for the determination of morphine be applied to opium and its preparations?

Oil of Soya Bean.—Can this be utilized more widely in pharmacy? (See *Y. B.*, 1910, 104; 1912, 120.)

Opium, Extract of.—To what is the loss of morphine due in making this extract? Is it constant with different lots of opium? (See *Y. B.*, 1910, 28; 1913, 359, 360; 1914, 17; 1917, 11.)

Opium, Assay of Extract of.—The B. P. process for the estimation of morphine in Extract. Opii Sicc., B. P. 1914, which may contain calcium phosphate, is not very satisfactory. An improved process would be useful.

Phenol, Liquefied.—The pharmacy of this substance requires further investigation (see *Gen. Index* and *Y. B.*, 1910, 233; 1917, 263). (Already undertaken.)

Santonin.—Analyses are required showing the percentage of santonin in Colonial and Indian species of *Artemisia* allied to *Artemisia maritima* (see *Gen. Index* and *Y. B.*, 1913, 293, 294; 1914, 138, 139).

Saponins.—A simple and accurate method of determining saponins in drugs is required (see *Gen. Index* and *Y. B.*, 1904, 78, 87; 1906, 71; 1909, 5, 71, 80; 1910, 115; 1911, 117, 124, 126; 1912, 131; 1913, 142, 145, 146, 147; 1914, 99; 1915, 115; 1916, 152; 1917, 90, 91).

Solvents.—Experiments are needed with a view to extending the use of solvents such as acetone, carbon tetrachloride, dichlorethylene, petroleum ether, amyl acetate, etc., in pharmacy (see *Y. B.*, 1919, 278).

Strophanthus.—An examination of the published methods of separating the different active principles obtained from the official seeds is needed with a view to recommending a standard process. The seeds in commerce are frequently mixed. Further information is required as to the active principles they severally contain (see *Gen. Index* and *Y. B.*, 1904, 244; 1905, 202, 370; 1906, 74, 110, 249; 1910, 220; 1911, 125; 1912, 131, 280, 337; 1913, 134, 147; 1915, 107; 1917, 284; 1919, 226, 228, 334).

Tannin.—A ready and tolerably accurate method for the determination of the tannin in various astringent drugs is required (see *Gen. Index* and *Y. B.*, 1906, 86; 1907, 158; 1912, 312, 314; 1913, 122, 187, 214; 1916, 208).

Taraxacum Root.—The investigation of fresh drugs such as this by Bourquelot's method for the detection and isolation of easily hydrolyzed glucosides is required (see *Y. B.*, 1907, 58; 1914, 319).

Tinctures.—Experiments are needed to determine the best method for the prevention of the occasional gelatinization of tinctures, with special reference to *Tinct. Card. Co.* P. B. 1914.

Valerian Root.—Chemical investigation of the fresh root by Bourquelot's method is required (see *Y. B.*, 1907, 58; 1914, 319).

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publications than those of the Association, except by consent of the Committee on Publication."— By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter. To maintain its activity and representation each Branch should see that at least three of its meetings during the year are reported in the Journal.

CHICAGO.

The 116th meeting of the Chicago Branch of the American Pharmaceutical Association was held Friday evening, February 18, 1921. at the LaSalle Hotel, with President C. M. Snow in the chair.

Preceding the meeting was a splendid dinner with a large birthday cake, served as a celebration of the fifteenth anniversary of the Branch. The dinner and the meeting were well attended. A telegram of congratulation from Dr. H. M. Whelpley and the St. Louis druggists was read.

At the meeting Secretary Gathercoal presented a history* of the Branch activities and membership for the fifteen years.

Ex-President Caswell A. Mayo presented the principal address of the evening. From the rich experiences he has gained at the thirty annual meetings of the Association that he has attended, Mr. Mayo gave us liberally of reminiscence and anecdote recalled by the pictures as they were presented. He took us from Cincinnati, Ohio, in 1887, to Detroit, Old Point Comfort, Va., New Orleans, into the White Mountains of New Hampshire, out to Denver, Lake Minnetonka, Minn., back east to Baltimore, and in 1900 to Richmond, Va. Many splendid pictures of the trip to Mackinac Island, in 1903, were shown. We also paid a visit to San Francisco with recollections of the great World's Fair in that city, and then east to Atlantic City, where we viewed a group of famous pharmaceutical bathers. Then from city to city, until finally, many beautiful pictures of the last meeting in Washington were presented. He concluded with a number of pictures illustrating some of the odd and beautiful features of New Orleans, where our next meeting will be held in September of this year.

Not enough can be said in compliment of the beauty and appropriateness of the pictures or of the very pleasing manner in which Mr. Mayo discussed them.

E. N. GATHERCOAL,
Secretary.

* The sketch follows; it was also accompanied by an interesting tabulation of the membership, which we hope to print in a later issue.

THE CHICAGO BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1906–1921.

By E. N. Gathercoal, Secretary-Treasurer (1913–21).

The beginning of the year 1906 witnessed the inauguration of two projects by the American Pharmaceutical Association that have been very beneficial in upholding and upbuilding its scientific standing and widespread influence among pharmacists.

Prof. C. S. N. Hallberg was the prime mover and backer of these two great constructive projects, *viz.*, the publication of a monthly bulletin or journal for binding the members more closely into a national unity and the gathering of the members resident in each locality into local associations or branches.

Thus, in January of 1906 was issued the first number of the *Bulletin*, the forerunner of our present JOURNAL, and in February 1906 was organized the Chicago Branch, the first of the twenty local branches that now include half of the membership of the Association. Hallberg, devoted to the A. Ph. A., was editor of the *Bulletin*, and was the strong support of the Branch.

Associated with Hallberg in forming the Chicago Branch were 58 members in Chicago and 14 in nearby cities, including such well-known names as Oscar Oldberg (first president), W. B. Day (secretary-treasurer, 1906–1912),

Leo Eliel, A. E. Ebert, F. W. Meissner, C. M. Snow, Wm. Gray, Herman Fry, C. P. Van Schaack, M. A. Miner, C. W. Patterson, Mrs. Amanda Stahl Druehl, C. H. Avery and others among the first officers and committees.

During 1906, 109 new members were received, through an energetic drive by Professors Hallberg and Oldberg. After 1906 the accession of members was much less rapid, though in 1907 there were 37 received, and 31 in 1908. The loss of Professor Hallberg, by death in 1910, and of Professor Oldberg, through ill health and removal to California, caused a deep feeling of depression in the Branch and the interest in new members was carried almost alone by Secretary Day. In 1918, with the annual meeting of the parent Association in Chicago, a real interest by Chicago pharmacists was manifested in the Branch and 68 new members were added, 40 more in 1919, and last year, 1920, was our banner year, with 131 new members.

The total number of new members added to the Branch during these fifteen years is 589, though many more throughout the state of Illinois, and even in surrounding states, have been added to the Association through the efforts of the Branch. With the names of 29 members, who have moved into Chicago territory, we have a grand total of 690 names on the rolls of the Branch. Our membership, December 31, 1920, was 347, thus our total losses during the 15 years have been 343 members, as follows: Thirty-eight by death, 33 by moving away, and 272 by resignation and suspension.

The thirty-three who have moved out of the Branch territory are still members of the Association, so that the Association has lost but 310 during the fifteen years. Your secretary has recently completed, with the kindly help of Treasurer Whelpley, the membership history of every name on the Branch rolls. It is interesting to note that of the 72 charter members, 23 have resigned or been suspended, 22 have died, 4 have moved away, and 23 are still members of the Branch. One member, Oliver F. Fuller, joined the Association in 1869, at the annual meeting held in Chicago that year, one member, Chas. E. Matthews, remains of those who joined at the Chicago meeting of 1893, and 52 remain members of the 68 who joined at the Chicago meeting of 1918. The Chicago Branch now constitutes more than one-tenth of the total membership of the Association and is exceeded in numbers, I believe, only by the New York Branch.

The Chicago Branch, since its inception, has held one hundred and fourteen meetings, and has consistently endeavored throughout its history to maintain the high standards set by the parent Association for the advancement of the science and art of pharmacy and the improvement of pharmaceutical practice.

Of the one hundred and fourteen meetings about half have been devoted to scientific subjects, about twelve meetings to pharmaceutical legislation, about twenty-five meetings to pharmaceutical practice and commercial pharmacy, several meetings to pharmacists and pharmacy in connection with the World War and the remainder to social occasions and to general meetings.

A long list of leading American pharmacists have read scientific papers before the Branch. Just a mention of such names as Dr. Henry H. Rusby, Prof. John Uri Lloyd, Dr. James H. Beal, Wilbur L. Scoville, Prof. A. H. Clark, Dr. George Simmons, Joseph Price Remington, Dr. Andrew Winton, Dr. Lyman F. Kebler, Dr. W. W. Stockberger, Dr. Edward Kremers, Dr. George D. Beal, Dr. Carl Alsberg, Dr. Henry Kraemer, Dr. F. J. Wulling, Seward H. Williams, Wm. Gray, Dr. Bernard Fantus and Dr. H. M. Gordin, indicates the character and eminence of the speakers that have appeared before the Branch.

It has been the aim of the officers of the Branch not to offer papers of a highly technical character but, rather, papers and illustrated lectures that could be appreciated by the every-day pharmacists. It has been our desire to attract and retain the interest of the great body of retail pharmacists to the scientific, professional side of pharmacy.

Pharmaceutical legislation has also received much attention and a number of meetings have been devoted to the Harrison narcotic law, the Volstead prohibition law, the Prerequisite amendment of the Illinois pharmacy law and to proposed Compulsory Health Insurance laws. We have been fortunate in having the services of such men as Jas. H. Wells, H. C. Christensen, Samuel C. Henry, James H. Beal, W. B. Day, I. M. Light, John J. Boehm and F. C. Dodds in caring for legislative matters of pharmaceutical interest.

Problems of Practical Pharmacy have been discussed and splendidly elucidated by leaders of such reputation as Dr. Oscar Oldberg, Prof. C. S. N. Hallberg, Leo Eliel, F. W.

Nitardy, W. T. Klenze, I. A. Becker, Dr. Bernard Fantus, Wm. Gray, Prof. C. M. Snow and many others. Especial attention has been given to Pharmacopoeial and National Formulary revision. The commercial side of pharmacy has not been neglected before the Branch as is witnessed by the following very popular meetings: "Building up of a Drug Business" (Jas. W. Morrisson), "Window Trims" (Hugh Craig), "Why Some Druggists Don't Make More Money" (Harry B. Mason), "Photographic Supplies—a Side-line for Druggists," "Candy—How It Is Made and How the Retailer Should Stock It," etc.

Among the general meetings, none ranks higher for attendance, interest and patriotism than the Reunion of Pharmaceutical Ex-Service Men, Nov. 18, 1919, when the Service Roll of Illinois Pharmacists was presented. Of the many splendid illustrated lectures delivered before the Branch, special mention should be made of the following: Dr. H. M. Whelpley in 1916 on "Some Historical Features of the A. Ph. A." "The A. Ph. A. Meeting in Colorado," by Prof. A. H. Clark in 1919. "The Social Side of the A. Ph. A. Meetings," by Dean C. A. Mayo in 1921.

This short history of the Branch cannot be concluded without an encomium for the man who succeeded Professor Hallberg as the mainstay of the Branch. Professor W. B. Day has constantly striven since the organization of the Branch to forward its best interests, to keep its best features before the retail druggists of Chicago, to give the A. Ph. A. the best that he has had in him, not alone in thought but in action.

Finally, the Chicago Branch aims for future growth and usefulness. Many important problems in the discovery, preparation and dispensing of medicines remain unsolved. The Branch should encourage its members to do their share in this research work. Higher education of pharmacists has not yet been fully attained. The Branch must constantly preach in its field the advantages to pharmacy of such higher education. General publicity, emphasizing in the community the professional standing of the pharmacist, is constantly necessary. The Branch must do its part in maintaining this publicity. We aim to support the parent Association in all its worthy endeavors and to coöperate with the Drug Trade Conference, and the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy and with our sister organization, the National Retail Druggists' Association, in all of their undertakings for the betterment of pharmacy.

CINCINNATI.

The Cincinnati Branch of the American Pharmaceutical Association held its regular meeting at The Lloyd Library, Friday, January 28, 1921, President Voss presiding. In the absence of our worthy secretary, Charles Apmeyer, who is confined to his home on account of sickness, Louis Werner officiated in his stead.

The feature of the evening was an illustrated lecture by F. M. Callendar, on the "Standardization of Drugs," which proved a splendid discourse on the advancement of scientific pharmacy in America, and an admirable endorsement for higher education.

The lantern slides were excellent, and exhibited the cultivation, gathering, and preparation of crude drugs. It also demonstrated how unscrupulous dealers replace drugs with old shoes, stones, shells, and a variety of foreign materials for fraudulent purposes.

The laboratory equipment necessary for standardization of medicinal preparations revealed a colossal collection of the most intricate and delicate instruments and apparatus, and brought to view the estimable value of the skilled operator. The lecture was highly educational, and worthy of the highest praise.

Discussions followed by Messrs. Kyser, Murphy, Werner and Mrs. Wetterstroem. A rising vote of thanks was tendered Mr. Callendar in appreciation of his efforts.

A gratifying report was made by Dr. J. T. Lloyd, regarding the condition of his father, Prof. John Uri Lloyd, who is recovering from an attack of pneumonia. The Branch was overjoyed upon receiving such encouraging information, and extended its hearty good wishes to Professor Lloyd.

Frank Freericks spoke upon the necessity of pharmacists making a united effort in combating the encroachment upon their rights due to prohibition legislation. He laid great stress upon the enormous expense heaped upon them, from which no real benefit is derived, and places an unnecessary burden upon the suffering public. The bond proposition was compared with a huge extortion. A committee was appointed to find some means of action by which the public could be made aware of this condition, and report at the next meeting.

D. E. Murphy, Chairman of the Program Committee, announced that cards will soon be issued for the annual banquet.

LOUIS WERNER,
Secretary, pro tem.

DETROIT.

The Detroit Branch, A. Ph. A., held the 5th monthly meeting of the 1920–21 season on the evening of Friday, February 11th, in the parlor of the Wayne County Medical Society Building. An informal dinner preceded the meeting.

The meeting was called to order at 8 P. M., President Chase being in the chair.

On motion the Secretary was instructed to write a letter of sympathy and send flowers to Mr. Moore, our able chairman of the Program Committee, who has been ill for the past two months. Dr. Kraus, Acting Dean of the Michigan University School of Pharmacy, was present and made a few remarks, congratulating the Branch for the harmony existing between it and the university.

Prof. Stocking presented the first paper of the evening on the "Viscosity of Oils and Its Relationship to Their Emulsions," taking an entirely new phase of the subject, the result of original research by the author.

H. L. Guffin next presented a paper treating with the practical problems of a drug store entitled "Drug Store Management," the subject treated under seven headings, as follows:

1. Keeping Store Clean.
2. Buying and Stock-keeping.
3. Handling of Customers.
4. Handling of Clerks or Employees.
5. Prescription Department.
6. Keeping the Law.
7. Accounting.

Much interest was displayed in the general discussion that followed the reading of this paper.

A vote of thanks was extended to the two speakers, who afforded us one of the most successful meetings of the year.

CROSBY B. WASHBURNE,
Secretary.

NEW ENGLAND.

A meeting of the New England Branch was held on Wednesday evening, February 16th, at the Massachusetts College of Pharmacy, President William H. Glover presiding. After the transaction of regular business, the following officers were elected for the ensuing year: *President*, Florin J. Amrhein; *Vice-President*, Leon A. Thompson; and *Secretary-Treasurer*, Leslie B. Barrett.

After the election of officers the members were joined by the members of the Boston Association of Retail Druggists, and a paper was presented by Florin J. Amrhein on "The Advisability of Uniform Standards for Essences and Extracts." This paper brought forth much discussion and criticism of the present dual standards. Next Mr. Glover spoke briefly on syrups of orange and lemon made from the tincture. He was followed by Professor La Pierre, who discussed several N. F. preparations. C. Fred Wright presented a report on legislation of interest to pharmacists proposed in Massachusetts.

Concluding the program, a buffet lunch was served in the Alumni Room, which was appreciated by all. There were fifty in attendance and indications promise an increased activity in the Branch.

FLORIN J. AMRHEIN,
Secretary.

NEW YORK.

The February 1921 meeting of the New York Branch of the American Pharmaceutical Association was called to order in the Lecture Hall of the New York College of Pharmacy Bldg., 115 West 68th St., N. Y. City, on Monday, February 14, 1921.

Ninety members and friends were present.

The minutes of the preceding meeting were read and approved.

Treasurer's Report.—The Treasurer's report was received and ordered filed.

Membership Committee.—The following applications were received for membership: Parent Organization, Reginald Miller, 55 East 32nd St., Brooklyn, N. Y. Local Branch, Abraham Dorb, 3181 Broadway, N. Y. City.

Fraternal Relations.—Mr. Smith brought in no report.

Audit Committee.—Dr. Diner submitted and read a report outlining a list of the moneys received and moneys expended during the year 1920. The report was ordered filed, with the thanks of the Association.

Education and Legislation.—Chairman Eddy brought in a lengthy report which, after being discussed by Dr. Diner, was ordered filed.

Member of the Council.—Dr. Hostmann reported progress.

Communications.—A letter was read by the Secretary from the President of the Senior

Class of the Brooklyn College of Pharmacy asking for approval by our Branch for a drive to collect a fund in honor of the late Prof. Joseph Kahn, the interest of which is to be expended towards paying for the annual medal to be awarded at that college. It was moved, seconded and carried that the plan be approved and endorsed as requested in the letter.

New Business.—Mr. Lehman discussed the work of the Professional Guild at some length.

Progress of Pharmacy.—Dr. Diekman brought in a lengthy report consisting of abstracts of various current scientific articles. The report was ordered received with the thanks of the Association.

The papers of the evening were now presented:

Dr. Curt P. Wimmer discussed the subject of "Perfumes and Perfumery," followed by Dr. Roddie Minor, who discussed the practical phase of this subject. Discussion was followed by Drs. Diner and Mayer. A rising vote of thanks was extended to the speakers.

HUGO H. SCHAEFER,
Secretary.

PHILADELPHIA.

The monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held at the Philadelphia College of Pharmacy and Science, Tuesday evening, February 8, 1921, President Goodhart occupying the chair.

New members having been elected and the minutes of the previous meeting approved, President Goodhart appointed the Nominating Committee, C. H. LaWall, chairman, and Prof. H. Youngken and Ambrose Hunsberger as members, the committee to report at the March meeting.

A communication was read from the World Metric Standardization Council urging the endorsement of the Metric Standards Bill (H. R. 14520), now in the House of Representatives. The endorsement of the bill was carried and the secretary was instructed to communicate with the members of the House.

Dr. Heber Youngken presented a paper on "Some Ideas for Improvement of Conditions in Pharmacy." Dr. Minehart, Dr. H. C. Wood and E. G. Eberle discussed the many phases of the paper.

Dr. W. W. McNeary then read a paper on the "Solubility of Volatile Oils in Water." He presented some very interesting facts. Dr. Wood and Dr. LaWall emphasized the fact that there apparently was nothing available in the literature in regard to this very important subject. Mr. McNeary and many other members were convinced that there was more oil used in the present methods than was necessary.

Both contributors were thanked for their papers.

JOS. W. E. HARRISSON,
Secretary.

PITTSBURGH.

The meeting of the Pittsburgh Branch of the A. Ph. A., January 25th, was unusually well attended and the proceedings thoroughly enjoyed. A number of the students of the College of Pharmacy, where the meetings are held, were present. A communication was presented from P. Henry Utech, of Meadville, Pa., member of the National Formulary Committee of the A. Ph. A., in which he offered to attend one of our meetings for the purpose of opening a discussion on "Making the National Formulary V, covering the additions, deletions and suggestive changes." In his letter Mr. Utech writes:

"I could then acquaint the members present with the outline of the work thus far acccomplished, the scope, principles and standards that have been adopted for the work, together with any other ideas or tentative rules that have been adopted and which the Committee are anxious to have an expression of opinion on."

It was unanimously decided that Mr. Utech be invited to be present at the next meeting of the Branch, Tuesday, February 15th, and that the occasion be given wide publicity in order that all pharmacists residing in the Pittsburgh territory be cordially invited to be present and given an opportunity to take part in the discussion. President Darbaker named the personnel of a committee to formulate a slate for officers to be presented at the next meeting.

The program, as announced, was then taken up, the subject being "Blood Grouping in Transfusions," by Edward C. Reif, Phar.C., of the College faculty and consulting chemist at St. John's Hospital. The paper was accompanied by demonstrations conducted by Dr. Francis Joyce, pathologist of St. Johns Hospital, and Dr. Rochman, pathologist of St. Joseph's Hospital. These demonstrations were fully carried to a conclusion by the use of blood contributed by several present, who consented to being bled for the

purpose. The results, upon completion, were shown under the microscope and proved very enlightening to all who enjoyed the privilege of being present. B. E. PRITCHARD,
Secretary.

At the meeting of the Pittsburgh Branch, A. Ph. A., held February 15th, P. Henry Utech, of Meadville, Pa., member of the Committee on Revision of the National Formulary V, was present by invitation to lead in a discussion on proposed additions and deletions. Mr. Utech said in his opening remarks, "It may interest you to know that the National Formulary had its origin in your own city of Pittsburgh. At a meeting of the A. Ph. A., held in this city in 1885, it appears a committee was appointed on unofficial formulas and undertook to collect such data as available. They began operations immediately and so assiduously did they perform their tasks that the following year, at the Providence meeting of the A. Ph. A., they were able to present a preliminary draft of the National Formulary." Referring to the task that is set before the Revision Committee, Mr. Utech called attention to the fact that "The present N. F. contains 800 titles, each of which must be carefully scrutinized, any changes or improvements in process or product noted, source of information investigated, and abstracted. The results in each case are referred first to sub-committees and later to full committees for approval or rejection. The whole work of revision, stupendous as it is, goes forward with such clock-like precision that but few persons outside the committee realize the scope or magnitude of the labor it involves."

Mr. Utech invited full and free discussion on all questioned articles or any new preparations intended for admission, stating that suggestions and advice proffered at this juncture will have a tendency to avert unfavorable criticism later on. If the N. F. V. as a practical working formulary fails to measure up to the high standard which the pharmacists of the country have the right to expect, the blame will attach to none other than themselves, because of their failure to participate in this important work. All the proposed deletions were named and the wisdom of their being omitted or retained was fully gone into. A rising vote of thanks was tendered Mr. Utech for his having made the journey from Meadville to be present at this meeting of the Branch for the purpose of giving us the opportunity to have foreknowledge of the character of this official volume.

Owing to the prominence given recently to several of our pharmacists having been fined for infraction of the Food and Drugs Act for dispensing Elixir I. Q. and S. not in accord with the official formula unwittingly, it having been purchased from manufacturing pharmacists, Dr. Blumenschein's talk on this preparation was timely, interesting and enlightening.

The nominating committee presented the following nominees to be elected at the next meeting of the Branch: *President,* Henry L. Lohmeyer; *Vice-President,* Edward C. Nied; *Secretary,* Benj. E. Pritchard; *Treasurer,* P. Henry Utech. B. E. PRITCHARD,
Secretary.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 13.
(Abstract.)

WASHINGTON, D. C., February 7, 1921.

58. *Election of active members—Result of vote.* Motion No. 57 (Applications Nos. 341 to 361, inclusive, for active membership) has received a majority of affirmative votes.

59. *Request that the National Formulary Committee be authorized to hold a meeting at some time during the coming summer.* Under date of January 17, 1921, Wilbur L. Scoville, Chairman of the National Formulary Committee, writes from Detroit, as follows:

"It will be necessary for the National Formulary Committee to hold a conference at some time during the coming summer if the National Formulary revision is to keep pace with the U. S. Pharmacopoeia revision. The U. S. P. Revision Committee will probably be called together about the first of July for a conference on U. S. P. work. The National Formulary revision work is now abreast of the U. S. P. revision and a conference at the proper stage of the work is equal to six to twelve months' time of correspondence.

"Both committees plan to have the experimental work on the retained articles finished

by June, when final action can be taken on them after conferences by the sub-committees to straighten out any differences which may have developed. Products can be shown and explanations made which would require many weeks of time by correspondence, and even then the decision be much less satisfactory.

"The work of the N. F. revision is in excellent condition. Some of the sub-committees have a considerable portion of their work finished and most of them expect to be ready for report by June. Final action should then be taken on the list of deletions, and also on the additions. The second year will then be devoted largely to new articles.

"There is every prospect now of a much earlier completion of the work than in previous revisions. All the work is being speeded up and the members of the committee are working industriously. The conference will not only save much time in the course of the revision, but also much work on the part of the committee.

"I therefore request that the Council authorize a meeting of the National Formulary Committee at some time during the summer at the expense not to exceed One Thousand Dollars.

"The time and place of the meeting will be selected by the Committee with due regard to economy in traveling expenses and a maximum of results. Better results can be secured by meeting at a different time from the annual meeting of the Association and the vicinity of Philadelphia will be more economical than New Orleans. If the National Formulary Committee can arrange to meet immediately before or after the Pharmacopoeia Committee, and at the same place, the traveling expenses of eight members of the N. F. Committee might be divided between the two committees.

"It is thus desirable to have the sanction of the Council for such a meeting made at an early date so that satisfactory arrangements may be made for the meeting."

It was moved by H. C. Fuller, seconded by A. G. DuMez, that the National Formulary Committee be authorized to hold a meeting during the coming summer, the exact time and place of the meeting to be decided upon by the Committee and that a sum, not to exceed $1,000, be appropriated to cover the necessary traveling and other expenses which may be incurred.

60. *Baltimore Branch elects member of the Council.* Under date of January 27, 1921, B. Olive Cole, Secretary-Treasurer of the Baltimore Branch of the A. Ph. A., advises that Charles C. Neal was elected member of the Council of the American Pharmaceutical Association to represent Baltimore Branch.

61. *Election of active members.* You are requested to vote on the following applications for active membership:

No. 362, Arthur Harry Stephan, 4958 Blackstone Ave., Chicago, Ill., S. & S. member; No. 363, Morris Breen, 1300 Ursuline St., New Orleans, La.; No. 364, Louis Sheinfine, 585 2nd Ave., New York, N. Y.; No. 365, Morris Dimiceli, 215 East 76th St., c/o Shoe Store, New York, N. Y.; No. 366, H. Walter Van Poppelm, 60-64 Adams Ave., W., Detroit, Mich.; No. 367, Geo. F. Gratton, Cass Technical High School, Detroit, Mich.; No. 368, Joseph J. Burniac, 60-64 Adams Ave., W., Detroit, Mich.; No. 369, John S. Morvant, 438 Hy. Clay Ave., New Orleans, La.; No. 370, Roger A. McDuffie, 22 S. Spring St., Greensboro, N. C., S. & S. member; No. 371, Arthur E. Carlson, 302 8th St., S., Willman, Minn., S. & S. member; No. 372, Thomas P. Lilly, 130 N. Wells St., Chicago, Ill.; No. 373, Thomas Arthur Meaders, Macon Hospital, Macon, Ga.; No. 374, Meyer Samson, 195 Exchange St., Rochester, N. Y.; No. 375, Ralph Harper Osmun, 505 S. Prospect St., Marion, Ohio; No. 376, Clovis J. Bouvier, 2137 Fern St., New Orleans, La.; No. 377, Louis Ralston Weiss, 4807 N. Hermitage Ave., Chicago, Ill.; No. 378, Lloyd Stoner, 4334 Grand Blvd., Chicago, Ill.; No. 379, Frank Alex, 1703 W. 71st St., Chicago, Ill.; No. 380, William Paul Brann, 6459 Cottage Grove Ave., c/o Prendergast and Keefrey, Chicago, Ill.; No. 381, Hugh Custer Naylor, P. O. Box 1413, New Orleans, La.; No. 382, Nathaniel Lyon Whisenhaut, 742 Poydras St., New Orleans, La.; No. 383, Louis Charles Spinner, 4127 Ellis Ave., Chicago, Ill.; No. 384, Louis Frank Plzak, 2433 S. 59th St., Cicero, Ill.; No. 385, Joseph Louis Petranek, 3210 Arthington St., Chicago, Ill.; No. 386, Charles P. Tuma, 6439 W. 27th Place, Berwyn, Ill.; No. 387, Adolph Waldo Sorenson, 1426 W. Congress St., Chicago, Ill.; No. 388, Anthony Joseph Alexa, 1701 W. 19th St., Chicago, Ill.; No. 389, Solomon Kracilshtchikuff, Tel-Abib Krinkin's Pharmacy, Jaffa, Palestine; No. 390, Mrs. Florence Palmer Ching, Box 738, Mobile, Ala.; No. 391, Albert P. Wiertelak, 4643 S. Mozart St., Chicago, Ill.;

No. 392, Kenneth N. Fenn, 3043 Jackson Blvd., Chicago, Ill.; No. 393, Frank A. Venner, 2700 E. Allegheny Ave., Philadelphia, Pa.; No. 394, Cecil Lester Jenkins, Italy, Texas; No. 395, James M. Doran, 5520 13th St., N. W., Washington, D. C.; No. 396, Frank H. Eckert, 461 Clinton Ave., West Hoboken, N. J.; No. 397, Harry E. Alvord, Chatham, N. Y.; No. 398, Paul D. Bloom, 4815 3rd Ave., Brooklyn, N. Y.; No. 399, Albert James Dougherty, 1071 Bedford Ave., Brooklyn, N. Y.; No. 400, Chas. F. O'Hagan, c/o Regan and O'Hagan, 30 North Main St., Portchester, N. Y.

A. G. DuMez,
Secretary.

JACKSON SQUARE.

In the rush for Commercial supremacy in which the whole world is engaged at the present time, one American City, while taking her part in the upward climb toward industrial heights, maintains the traditions and the historical interest of two centuries to offer to her guests as a welcome relief from the rush of business activities.

New Orleans, now Second Port in the U. S. in the matter of actual commerce handled, enjoys the distinction of being one of the most interesting cities in the country to the tourist. Her architecture shows the domination of three nations. A cosmopolitan city—all languages are heard in a day's travel through her streets and people of all nations are met with.

NEW ORLEANS 1921 A. PH. A. CONVENTION CITY.

JACKSON SQUARE—The Place d'Armes of Old New Orleans, where the title of "all the Louisianas" has changed from French to Spanish, back to French, then to American Rule during the past two centuries.

New Orleans is keeping inviolate her historic buildings and centers. One of the most beautiful of these centers is JACKSON SQUARE, which in the old days formed the nucleus of the old city and was also the seat of government for both France and Spain when these nations in turn owned that vast stretch of country purchased by Jefferson from Napoleon for the sum of fifteen million dollars and known as the Louisiana Purchase.

Jackson Square, now a public park, was in the old days the Place d'Armes or the Drill Grounds for the French soldiers—on one side the Mississippi River, on the opposite the famous

St. Louis Cathedral, still in use as a place of worship. Flanking the Cathedral on one side is the old CABILDO, built by the Spanish as the capitol of Louisiana. From the Cabildo floated in turn flags of the French and Spanish—again French—and later that of America. To-day, with its companion building on the opposite side of the Cathedral, it houses a wonderful collection of Louisiana historical objects, art works and natural science collections.

A liberal education in regard to Louisiana's historical and natural resources is to be had in these two buildings.

In the center of the Square is the famous equestrian statue of General Andrew Jackson, the savior of New Orleans in the Battle of New Orleans in 1812. This statue is regarded as one of the most remarkable of all the statues in America, being a wonderful example of balancing.

Jackson Square itself is but the center of what is known as the "Old French Quarter." Every block in this quarter has its treasures in historic buildings and days can be spent here by the visitor delving into the mine of history and romance which awaits his coming and his study.

New Orleans' peculiar charm lies in its combination of tradition and modern industrial progress. The city is blessed in having been the center of remarkable political changes, mainly under wise leaders. Because of this, its natural advantages are tremendous. The present generation is taking advantage of these conditions and no city in the country is showing a more marked or a more remarkable industrial progress than is the Crescent City of the South.

A NEW ANTINARCOTIC STEP.

The Paint, Oil and Drug Reporter of February 21 says editorially:

"It is officially announced from federal sources that the Rainey bill (H. R. 16118), amending the federal antinarcotic statutes, is designed to bring the provisions thereof into closer harmony with The Hague conventions upon which such legislation in this and other countries has been more or less intimately based. The new measure has to do only with the exportation and importation of the proscribed narcotics. It does not in any way aim directly at the improvement of conditions in their domestic distribution.

"There can be no gainsaying the fact that if America wishes to accept its share of the responsibilities upon which The Hague conventions were predicated, American regulation of its participation in the international traffic in narcotics must be harmonious with the basic decrees of those conventions. Therefore, the Rainey bill is a progressive step, at least, in its purpose. But the application of means toward that end opens the door for a deal of contention in connection with the determination of just what may at a particular time be the amount of crude opium or coca leaves necessary to provide for medical and legitimate uses in this country. The bill provides that only such amounts of these two crude drugs or other crude narcotics as may be determined so to be necessary by the heads of the Departments of State, Treasury and Commerce may be imported, and those only in a manner to be prescribed by the same officials, the importation of derivatives being unqualifiedly declared unlawful. Lawmaking in this country seems to have become largely a matter of authorizing somebody to make regulations.

"Perhaps by striking at the root of the traffic, as the Rainey bill purposes, the evil of the misuse of narcotics will be destroyed. It is to be hoped that the result will at least be the getting of such a controlling hold on the traffic as will do away with the multitude of federal, state and local regulations on the handling of the proscribed drugs which entangle their legitimate use in miles of red tape and affect their misuse only to the extent of increasing the percentage of profit asked by the dishonest trafficker.

"If recollection serves, there is an article in one of The Hague conventions which seeks to assure the legitimate use of narcotics a minimum of restriction. Anyone knowing the extent to which the immoral traffic obtains, who has seen the consternation of the physician whose fountain pen would not work when he wanted to prescribe codeine for a broncho-pneumonia patient, and his wrath when the pharmacist, by regulation bound, refused to honor the penciled script, might well ask whether we have approached within hailing distance of harmony with the original purpose of the antinarcotic movement.

"Perhaps the Rainey bill indicates that we are learning that regulation without universal restriction is a possibility. Much of our recent legislative effort has had no such indication. It may be that statutory regulation approaches a day of common-law simplicity. That is a consummation devoutly to be wished. But—wait for the day when the three Secretaries enter upon their determining!"

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: A. G. DUMEZ, *Chairman;* J. H. BEAL, CHARLES H. LAWALL, CASWELL A. MAYO, H. B. MASON, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

Collaborators: C. HERBERT PACKARD, President, A. Ph. A.; WILBER J. TEETERS, President, A. C. P. F., H. C. CHRISTENSEN, Secretary, N. A. B. P., E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; CHARLES H. LAWALL, Chairman, Council A. Ph. A. The Chairmen of the Sections A. Ph. A.: A. G. DUMEZ, IVOR GRIFFITH, EDWARD SPEASE, ADAM WIRTH CURT P. WIMMER and E. F. KELLY.

BRITISH EDITORIAL COMMENT ON U. S. P. REVISION METHODS.

An editorial of the *Pharmaceutical Journal* is concluded by stating, "we are not prepared to advise imitation or emulation in their entirety of the revision plans and procedure of the American Pharmacopoeia Committee; there are points in them which, with adaptive modification, might advantageously be adopted in connection with B. P. revision."

It is evident that British pharmacists have not the recognition they should have in the revision of the British Pharmacopoeia. There is also too much secrecy in preparatory revision work.

FOURTH EDITION OF THE JAPANESE PHARMACOPOEIA.

The Japanese Government has just issued the fourth edition of the Japanese Pharmacopeia. There are a number of new features and many changes. Japanese pharmaceutical and chemical manufacture is encouraged. The Pharmacopoeia becomes effective December 1921, when all drugs and medicinal chemicals in the Japanese market must conform to the new standard. The standards of quality are raised and many new tests have been introduced. Substitutes for certain products that may be used are included.

The new edition has 94 deletions and 73 additions, thus the total number of titles has been reduced from 703 to 682.

PAUL EHRLICH'S COLLEGE DEGREES.

Paul Ehrlich, according to Dr. Simon Flexner (Lane Lecture 1917), "was a kind of a medical student who never succeeded in winning his degree. It was one of the facts of his life of which he was inordinately proud. 'I will say for his professors in this connection that they got tired of him and determined to get rid of him.' And to give him his degree they went through the form of an examination and graduated him."—*Town Gossip*, February 19, 1921.

THE TITLE OF DOCTOR.

A movement is under way at the University of Virginia to reserve the application of the title of doctor to those who have earned it in the study of medicine, and to call the rest of the teachers Mr. An English philosopher has said, "When every one is somebody, then no one's anybody." We are reminded of the relief expressed by one, who had many titles, when he was called by his first name or in a more formal way as Mr. The application of a title means little when many are given it, and especially when it is not deserved. The movement should receive encouragement; after all, the world does not care so much what degrees have been taken, but is interested in what the individual can do.

THE SMITH-TOWNER EDUCATIONAL BILL.

The Smith-Towner Bill seeks to create a Department of Education, with a Secretary in the President's Cabinet. It provides federal aid for education to the states, but prohibits federal control of education within the states. It is not the purpose to interfere with private schools. Among the requirements exacted of states that participate are the following: Public school opportunities for at least twenty-four weeks must be provided; compulsory attendance at a public or private school for all children between the ages of seven and fourteen; English language as the basis of instruction; and an appropriation of at least as much money as the respective states expect to receive.

TO LINK OUR SCHOOLS AND INDUSTRY.

The following paragraph is taken from an article by Frank S. Slutz in *Forbes*, March 5, 1921, on the subject indicated by the title:

"The schools rank first among the industries which put the *man first*—for the man is their product. The schools are the engines for constructing out of the coming generations a spirit and practice of industry which shall contribute to the abundance of life. The schools can, quietly and surely, create an American Industry which will include all workers, which will put the making of men first, which will be a potent example of sharing, which will insist upon the truth in all relationships, which will preserve the heart of American independence, and which will be founded upon right individual choices of vocations."

ROMANTICISTS AND REALISTS IN MEDICINE.

Current Opinion for February—under above title in which an article by Dr. Pierre Mauriac of the University of Bordeaux is largely drawn upon—states "complaint is heard everywhere among physicians that medicine has become too scientific. There is much talk of experiments, of laboratories, of serums. The physician as such seems to have disappeared and the world has in his place one who may be a chemist or a physiologist or an operator with a strange Greek name using queer instruments and employing a mysterious jargon. There are controversies about the right attitude of medicine. The opposition between the physician who has absolute faith in his 'remedies' and his brother who employs with suspicion the best tested 'cures' is ancient but it grows more bitter daily."

"The doctors of our generation seem often to prefer the curative power of nature, as they call it, to any discovery. Let nature do it—that is the cry now. This blind confidence in the power of nature—undefined and unknown nature—is but a form of the prevailing skepticism, however it be covered by formulas."

Claude Bernard complained "that the physiologist who would not administer a remedy unless he understood beforehand through laboratory tests what its action was, arrived finally at a state of mind that kept him from prescribing anything. The spirit of realism rushing to an extreme, the very thing the romanticists, who set such store by imagination, vision and idea, are accused of doing."

"The business of the physician is to cure the patient if he can and, if he finds a remedy dating from the eighteenth century and since forgotten, the invalid will forgive the reversion to a dead past if he is healed."

THE REACTIONS FOLLOWING INTRAVENOUS ADMINISTRATION OF ARSPHENAMINE.

The untoward symptoms that still frequently follow the intravenous administration of arsphenamine have been a cause of much concern to therapeutists. Despite the years that have elapsed since this mode of treating syphilis was first instituted as the result of Ehrlich's investigations, the difficulties encountered have not yet been overcome. Among the explanations advanced to account for the febrile and other symptoms that are occasionally encountered is the view that a rapid destruction of spirochetes by the drugs results in a liberation of microbial endotoxins which bring about the more or less severe reactions in the patient. This hypothesis, however, has been made untenable or at least reduced to a relatively minor significance by the recent demonstration that both syphilitic and nonsyphilitic patients may experience similar reactions following the intravenous injections of arsphenamine. As the result of these observations by Strickler[1] and others at the Jefferson Medical College of Philadelphia, it appears that the most important factor in the production of certain of the undesired arsphenamine reactions is the medicament rather than the patient. In fact, it is the conclusion of these Philadelphia clinicians that the untoward phenomena may be produced by some impurity in the arsphenamine or by some chemical reaction between the arsphenamine and the chemical constituents of the blood, or the two factors may be operative at the same time.—Editorial, *Journal A. M. A.*, January 15, p. 183.

SOME STATISTICS ON DRUG ADDICTS.

Thomas S. Blair, M.D., Pennsylvania Bureau of Drug Control, reported on 3,104 cases of drug addiction under the care of physicians. None of the persons listed were

[1] Albert Strickler, "A Clinical Study of the Reactions Following the Intravenous Administration of Arsphenamine in Nonsyphilitic Persons," *Arch. Dermat & Syph.*, 2, 692, 1920.

taking less than sixteen average doses of narcotics daily:

Cases of pure addiction	1,069
Diseased persons addicted to drugs	571
Persons with cancer and other neoplasms taking morphine	484
Persons with other incurable diseases taking morphine	348
Aged persons addicted, not otherwise diseased	189
Aged addicts with demonstrable disease	162
Addiction due to postoperative conditions	49
Addicts not classified	83
Deaths among addicts, not listed above	149
Total in all classes	3,104

PARSLEY AN ABSINTHE SUBSTITUTE IN FRANCE.

Substitutes for the seductive absinthe are prepared in France from parsley; these beverages are said not only to resemble absinthe, but are more powerful in effect.

AMERICAN DRUGGISTS' FIRE INSURANCE COMPANY TO BUILD.

The American Druggists' Fire Insurance Company proposes to erect a five-story building at the corner of Walnut and Canal Streets, Cincinnati, for the home of the Company. It is to be similar in design to the new Hamilton County Court House.

NEW UNIVERSAL POSTAL UNION RATES.

The International Bureau of the Universal Postal Union advises that the U. P. C. maximum postage rate on letters of 50 centimes for the first ounce or fraction thereof and 25 centimes for each additional ounce or fraction thereof became effective February 1, 1921, in Denmark, Finland, Italy, Norway and Switzerland, and became effective February 15, 1921, in France, so that letters mailed in those countries are now subject to those rates. Patrons of the United States Postal Service, who desire to prepay a reply to a letter sent to any one of the countries above named, will be required to forward two reply coupons, instead of one as heretofore.

EXHIBIT OF MEXICAN PRODUCTS IN NEW YORK CITY.

The Department of Commerce of Mexico has been exhibiting in a building in Fourth Avenue, near 18th Street, New York City, a portion of the display of Mexican natural and manufactured products, which has been shown in Dallas, Texas. The display is to be shipped to Milan, Italy. Oils, fats, waxes, senna and eucalyptus leaves, starch and sarsaparilla root are included among the articles shown.

A COMPARISON OF SACCHARIN TESTIMONY.

Alleging that state and municipal food and drug officials were recently addressed from the Bureau of Chemistry, U. S. Department of Agriculture, with relation to saccharin, in a manner which presented in abstract only the medical testimony introduced by the Government in the "saccharin case" against the Monsanto Chemical Works, the result of which was a "hung" jury, the Monsanto firm has prepared and distributed a broadside paralleling the Government's testimony with abstracts from its defense. It does this, as it says, in the belief that it is only fair that both sides should have a hearing.

JAPANESE BRUSH TRADE HURT BY REPORT OF INFECTED BRISTLES.

As a result of injury to the brush trade manufacture in Japan, the Japanese Government will open a national disinfection office. Bristles to be used in manufacturing brushes must be disinfected, and a fine is imposed for violation of regulations applying to the industry.

PERSONAL AND NEWS ITEMS.

Harry B. Rosengarten, president of Powers-Weightman-Rosengarten Company, died at his home in Philadelphia, February 19th, after a brief illness, aged 84 years. A brother, J. G. Rosengarten, one year his senior, died less than two months previously. There was a close attachment between the two brothers, and grief had its part in the passing of the first named. During the long period of his untiring activity, Mr. Rosengarten held the deep respect of all business men he came in contact with, and was popular with the large number of employees of the offices and plants. Aside from his connection in various financial organizations, he was a member of the American Chemical Society, and for many years filled various offices, including the presidency, in the Philadelphia Drug Exchange. Mr. Rosengarten is survived by his widow, two daughters, and four sons, George D., Adolph G., Frederic, and Joseph G.; all of the latter

are associated in the Powers-Weightman-Rosengarten Company.

Prof. Albert Einstein, author of the theory of relativity, is to be in the United States this month. His purpose in coming is to aid in the creation of a fund for the Hebrew University to be erected on the Mount of Olives, Jerusalem.

Dr. Charles H. Herty delivered a lecture at the National Museum in Washington on "The Reserves of Chemical Warfare," February 21.

John Keats, the centenary of whose death was celebrated February 23, passed the examinations at Apothecaries' Hall, July 1816. His letters contain allusions to his experience as a medical student, and his poems references to medical and chemical facts. Keats died in Rome and, on the initiative of U. S. Ambassador Johnson, the house in which he died has been bought by subscriptions, most of which were made by Americans.

Dr. E. A. Ruddiman, former dean of the School of Pharmacy at Vanderbilt University, is now head of the department of standards and research of John T. Milliken and Company, St. Louis. **J. D. Gillis,** formerly of the American Chemical Products Company, is now the general manager of the Company.

Judge Stanley W. Merrell of the Ohio Supreme Court, whose death occurred last month, was a brother of **Charles G.** and **Thurston Merrell,** Cincinnati. Though the deceased was only 44 years of age, he had made a very high place for himself in the city and state.

H. S. Noel, of Indianapolis, is scheduled for an address on "Getting the Most Out of Business," under the auspices of the Purdue Pharmaceutical Society, March 19th.

Prof. C. B. Jordan addressed the Tippecanoe County Medical Society on "The Effect of Oxidation and Hydrogen Ion Concentration on the Toxicity of Arsphenamine and Neoarsphenamine."

Peter G. Walter, of Pittsburgh, is prominently mentioned for the position of Prohibition Director of Pennsylvania.

Harry B. Mason has been named secretary of Parke, Davis & Co., Detroit. A year ago he was elected to membership in the board of directors of the corporation.

W. A. Rawls, Pensacola, Fla., retired from active business on his 70th birthday. With the exception of eight years, during which Mr. Rawls was state chemist, he has been continuously in the retail drug business and is the oldest living pharmacist in Florida who regularly attends the annual meetings of the state association.

Cornelius Osseward, Seattle, Wash., has disposed of his pharmacy to Louis Rubenstein; the store has been merged with the other pharmacy owned by the purchaser, and is said to be the largest exclusive prescription pharmacy on the Pacific Coast. Mr. Osseward, at present, has no definite plans for the future.

George W. McDuff, local secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION, has been appointed secretary-treasurer of the Board of Police Commissioners of the City of New Orleans.

Members of the ASSOCIATION sympathize with Prof. and Mrs. E. Fullerton Cook in the loss of their youngest son, who died of pneumonia March 4.

OBITUARY.

EMILE BOURQUELOT.

Prof. E. E. Bourquelot died at his home in Paris, France, of pneumonia. The funeral ceremony took place January 29th, at the Church of Notre Dame des Champs, which on that occasion was filled to overflowing by representatives of medicine, pharmacy, military and civic organizations, the universities, etc. The interment was made at Jandin, where the noted pharmacist was born sixty-nine years ago.

At the age of 21 the future professor was apprenticed at the "Pharmacie Lovet," in Sedan, which bore the quaint sign, "A la truie qui file;" six years later he was appointed chief pharmacist at the historic Hospital Laennec; at the age of thirty-eight he was assistant professor at the School of Pharmacy and then advanced to full professorship, after the death of Professor Bourgoin. He contributed a paper on the International Pharmacopoeia to the International Congress of Pharmacy in Paris (1900), and was a prominent member of the Brussels Conference; at The Hague he read a monograph on "The Synthesis of Glucosides by Ferments."

The *Pharmaceutical Journal* says that according to the testimony of Professor Greenish and other English pharmacists who had the good fortune to fraternize with the late Professor Bourquelot "at conferences or as visitors to him at the Hospital Laennec—he was a man of surpassing personal amenity and charm, of the friendliest and kindliest disposition, ever anxious and delighted to be of service even to strangers who had no claim upon his time or attention, a man of science in whom there was no pretense or dogmatism, a master of pure and eloquent French, whose lectures were models of lucidity and clear musical enunciation, and in his refinement, culture, and winning courtesy and chivalrousness a perfect example of the French gentleman, by nature and nurture, than whom in human civilization there is no higher moral product."

His well-known book on soluble ferments was published in 1896. As editor of the *Journal de Pharmacie et de Chimie* and as a man of science his reputation was world-wide. A sketch of the deceased is printed in August issue of 1920, p. 757, THIS JOURNAL, and references to him will be found in the February number pp. 146 and 148. He was an Honorary Member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

OTTMAR EBERBACH.

Ottmar Eberbach died at his home in Ann Arbor, late in January, aged seventy-five years. Though largely interested in supplying scientific apparatus and chemicals to educational and scientific institutions, the pharmacy in Ann Arbor has been continued, and enjoys the reputation of a finely appointed prescription drug store. He was a member of the original board of directors of the University of Michigan School of Music. His interest in civic affairs is shown by the naming of one of the Ann Arbor public schools in his honor. Mr. Eberbach became a member of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1869. A brief sketch appears in the November issue, 1919, of THIS JOURNAL, p. 887.

RICHARD N. DODDS.

Richard N. Dodds, of Springfield, Illinois, passed away January 21st. Mr. Dodds for a number of years was secretary of the Illinois Pharmaceutical Association. He was seventy years old and a pioneer druggist of Springfield, having been in business there for nearly fifty years. Mr. Dodds was well and favorably known in pharmaceutical circles throughout the state. He joined the AMERICAN PHARMACEUTICAL ASSOCIATION in 1902.

JACOB BURGHEIM.

We are advised of the death of Jacob Burgheim, veteran druggist, of Houston, Texas, but have no data from which to prepare a sketch. Mr. Burgheim was one of the oldest members of the Texas Pharmaceutical Association, in which organization he was active for many years, and a life member. He was an ex-president of that Association, and during several years a representative to the AMERICAN PHARMACEUTICAL ASSOCIATION, of which he became a member in 1892.

SOCIETIES AND COLLEGES.

MEETING AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

The tenth annual meeting of the American Drug Manufacturers' Association will be held at the Hotel Biltmore, New York City, April 11–14. The meeting of the scientific section will be called to order at 10 A. M., Monday, April 11th, and will comprise three sessions, a morning and afternoon session on the eleventh and a morning session on Tuesday, April 12th. The biological section will meet for a single session at 2.00 P. M. on the 11th of April, while the meeting of the association as a whole will open at 2.00 P. M., April 12th, and continue through April 14th, closing with a banquet on the evening of the latter date.

The convention will deal, for the most part, with the changes wrought by the present economic state of the country, involving such problems as the transition from seller's to a buyer's market and the slowing up of collections. The alcoholic medicinal problem will again be made the principal topic of discussion at one of the sessions, and prominent outside speakers will be heard on this subject.

One of the most unique features of the convention will be a debate on the very widely discussed problem of the sales tax. The services of the most authoritative and magnetic speakers on each side of the question will be secured and, after the manner of a regular debate, time will be allowed each speaker for rebuttal. The debate will then be followed by discussion on the floor.

OFFICERS OF MINNESOTA STATE PHARMACEUTICAL ASSOCIATION.

The attendance at the Minnesota State Pharmaceutical Association, February 7th, was the largest in its history; the additions during the convention bring the membership to over 1300. President Phillips and Secretary Falkenhainer of the Iowa Association were present. President E. L. Newcomb recommended a change in the present system of electing officers to that of the AMERICAN PHARMACEUTICAL ASSOCIATION, by mail vote. The following officers were elected for the ensuing year: President, E. A. Grouchau, Duluth; first vice-president, Hon. H. C. Trowbridge, Austin; second vice-president, M. G. Johnson, Fulda; third vice-president, Miss F. M. Greenwalt, St. Paul; secretary, Gustav Bachman, Minneapolis; treasurer, Myron A. Karras, St. Paul. Executive committee for three-year term, E. L. Newcomb, Minneapolis.

MID-WINTER MEETING OF THE OHIO PHARMACEUTICAL ASSOCIATION.

The semi-annual meeting of the Ohio Pharmaceutical Association was held in Columbus February 3rd. The subjects for consideration pertained largely to legislation and publicity. Chairman E. G. Winger of the press committee made a report and outlined plans for work during the next six months. President Schwilk presided and presented an address; the suggestions therein were adopted by the convention. It was expressed that the poison and narcotic laws of the state should be under the supervision of the State Board of Pharmacy.

NEW ORLEANS TO ORGANIZE A RETAIL DRUGGISTS' ASSOCIATION.

A movement was started for organizing a retail druggists' association in New Orleans. Adam Wirth was chairman of the meeting and J. J. Kemler secretary. A committee with Sidney J. Besthoff, chairman, and members J. A. Legendre, Adam Wirth, Christian Schertz, Frank C. Nuccio, Charles L. Fielder and Fred W. Ames, has the organization in charge.

NEW ORLEANS DRUGGISTS' GLEE CLUB.

New Orleans druggists are exhibiting the get-together spirit. A Glee Club has been organized with Robert F. Grace, president; Frank J. Nuccio, first vice-president; William A. Worner, second vice-president; Elliot Jacob, third vice-president; Joseph Clesi, secretary-treasurer, and R. Menendez, sergeant-at-arms. Other members comprise many from the New Orleans A. Ph. A. membership.

WEST VIRGINIA PHARMACISTS URGE NEW STATE DRY LAW.

The West Virginia Pharmaceutical Association has taken official notice of and will urge the passage of a bill which is pending in the State Legislature, to meet for the long session on March 16th, which has for its purpose, if passed, to make the state prohibition laws coincident to the Volstead national prohibition act. The matter is being taken up through members of the association with legislators in all counties of the state and a determined effort will be made to have the bill passed when the Legislature meets again.

CONFERENCE OF NORTHWESTERN PHARMACY DEANS.

An important conference of the deans of the pharmacy schools in Oregon, Washington and Montana, was recently held in Portland.

It was called primarily so that each school could get better acquainted with the type of work given in the other schools. It was found that all of the five schools represented required full four years of high school for admission of candidates for degrees and it was agreed to maintain this standard. Special students, not candidates for degrees, must have not less than two years of high school.

The question of the three-year course as the minimum for a degree for students entering, as will be required by the American Conference of Pharmaceutical Faculties, was discussed. The opinion was expressed that the northwest schools were ready to make this requirement at an earlier date.

Some of the most helpful results of the conference were, first, consideration of the courses of study making up the curricula of the several schools, and, second, the subject matter of the various courses. This conference was only a preliminary meeting and others will follow each year. An effort will be made to make the curricula of the several schools more uniform in so far as their local conditions will permit. It was also agreed that at the next conference all members of the faculties of the several schools should be present and that special emphasis in the conference will be given to a discussion of teaching methods.

Dean Miller of North Pacific College, Portland, acted as chairman of the meeting, and C. W. Johnson of the University of Washington acted as secretary. Dean Ziefle, of Oregon Agricultural College, Dean Dirstine, of Washington State, and Dean Mollet, of the University of Montana, were also present.

VALPARAISO UNIVERSITY DONATED TO VALPARAISO, IND.

A million-dollar gift was acquired by citizens of Valparaiso when Henry Kinzie Brown, former president of Valparaiso University, presented complete ownership of the institution's grounds, buildings and equipment to them in the name of the Brown family.

FEW LABORATORY MEN IN MEDICINE.

Dean Edsall of the Harvard Medical School said in his report that in the laboratory branches there was a disturbing paucity of capable and well-trained instructors, and even of seniors. To meet this need Dean Edsall announced that the Harvard Medical School faculty had decided to offer the degree of doctor of medical sciences.

THE SERVICE OF PHARMACY TO THE STATE AND NATION.

In an article for the press Dean L. E. Sayre speaks of the service of pharmacy, and impresses on the people of Kansas the need for adequate support of the Schools of Pharmacy and Medicine in the State University.

BISHOP WM. PROCTER REMINGTON AT IOWA COLLEGE OF PHARMACY.

Bishop Wm. Procter Remington recently addressed the students of the Iowa College of Pharmacy. He told them of some of the characteristics of his father, Joseph Price Remington, characteristics little known to students, and of his father's ideals. He directed attention to the great opportunities a pharmacist has for influence in his community, that every drug store has an atmosphere of its own and that it is created by the proprietor and his helpers. Bishop Remington was introduced by E. L. Boerner, professor emeritus and formerly dean of the college.

NEW YORK COLLEGE OF PHARMACY AIDS PHARMACY IN WUCHANG.

Last year, one of the graduates of the New York College of Pharmacy was Nellie Choy Wong, a Chinese girl educated in this country by the Episcopal Board of Missions. Upon her graduation Miss Wong was assigned to the Wuchang Hospital as pharmacist and teacher of pharmacy. Recently in a letter to one of the New York College faculty, Miss Wong picturesquely described her attempts to teach pharmacy to two pupils, without the aid of any apparatus whatsoever. The letter was referred to the Board of Trustees of the College who met the financial needs of their alumna.

PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE CELEBRATES 100TH BIRTHDAY.

The celebration of Founders' Day of Philadelphia College of Pharmacy was opened in historic Carpenter's Hall, on the afternoon of February 23rd. It is worthy of note that the records of the institution are complete from its beginning, and it was most impressive to hear resolutions read from these, and from the very platform where had stood, a hundred years before, the presiding officers of that historic meeting, and to note in the audience descendants of the men who had taken so conspicuous a part in directing the early affairs of American pharmacy. Henry Troth, grandson of Henry Troth, one of the founders, and Samuel H. Troth, a nephew; Wm. Shewell Ellis, grandson of Charles Ellis; Charles Marshall, grandson of Charles Marshall, founder, and first president, and a number of others, whose ancestors had participated in the establishment and the development of the college, were in attendance.

President Howard B. French introduced Chairman George M. Beringer, of the Board of Trustees, who spoke on the early history and development of the college. He brought out many significant facts relative to the condition of the drug trade of that period, and showed forcefully that the hundred years which had passed had been a hundred years of progress.

A large representative delegation attended from New York; Prof. Henry P. Hynson came from Baltimore, and President-elect Hilton of the A. Ph. A. from Washington. Representatives of the medical profession, the University of Pennsylvania, various associations, and visitors from other cities were also present. The program was continued at night in the College Building. President Howard B. French presided, and the speakers were Dean Charles H. LaWall, Dr. H. V. Arny, Hon. J. Hampton Moore, Mayor of

the City of Philadelphia, and Prof. Samuel P. Sadtler. The subject of the first speaker was "The Founding of the Philadelphia College of Pharmacy;" Dr. H. V. Arny spoke on "The Pharmacy of One Hundred Years Ago and To-day." The Mayor expressed his interest and that of Philadelphia in the institution, and Professor Sadtler dwelt on the part pharmacists have had in the development of chemistry.

The College is to have its formal centennial observance in June in connection with its commencement, and plans are well under way for providing a new home.

THE PHARMACIST AND THE LAW.

REGULATIONS FOR THE PRACTICE OF PHARMACY IN THE REPUBLIC OF PANAMA.

A National Council of Pharmacy, by creation of the National Council of Hygiene, regulates the practice of pharmacy in the Republic of Panama. The National Council of Pharmacy consists of five qualified pharmacists, appointed every two years; the officers are a president, one vice-president and a secretary; no person can engage in or carry on the practice of pharmacy in the Republic save by the authority of the Council. All holders of foreign diplomas issued by a statutory authority of the country of origin will be admitted to practice on producing valid documentary credentials, together with a payment of three balboas, equivalent to three dollars, this being the prescribed fee for a license to practice. But this is only a provisional license for six months, on the expiry of which the license-holder, in order to remain in practice, must pass an examination for which a fee of 50 balboas, to be paid into the National Treasury, is chargeable. On and after March 5, 1926, all pharmacies not in the charge of a duly qualified pharmacist, or for which a license has not been obtained, will be closed. A new shop cannot be opened, unless by authority of the Council, upon which is imposed the duty of keeping a correct register of all pharmacists in the country. Provision was made for the registration of those in business, but after the expiration of that period all those who failed to register, or whose names do not appear on the register, are liable to a fine of five dollars. It is now unlawful under the law for an unregistered vendor to sell any drugs or chemicals for medicinal use under a penalty of 25 balboas for a first and 50 balboas for each subsequent offense. If any proprietary medicine is sold without the express authorization of the Council the vendor may be amerced in a fine of from 10 to 20 balboas. It is forbidden to sell poisons to private individuals. They may be sold only to members of the medical profession or for use in art and industry, the package or container being labelled with the name of the poison and the name and address of the seller. Medical practitioners are permitted to open pharmacies and practice pharmacy, provided that they conform to the same legal requirements as pharmacists. The fine for contravention of such requirements by a medical practitioner is 50 balboas. The Council of Pharmacy is invested with disciplinary power to suspend from practice any registered pharmacist who is found to be guilty of addiction to alcohol, cocaine, or morphine; this suspension to be decreed by the Governor of the province in which the addict resides. For the present, in order that there may be an official standard for drugs and medicinal preparations, the United States Pharmacopoeia is adopted. All prescriptions must be written plainly in Spanish or Latin, and signed and dated by the prescriber, along with the name of the patient. The dispenser is to copy the prescription into a book kept for the purpose, and the book preserved for not less than a year from the date of entry. The pharmacist is required, if called upon, to furnish a copy of the prescription to the customer. And if an excessive dose or an error occurs in the prescription, it devolves upon the pharmacist to make any necessary correction, or to communicate on the subject by letter with the prescriber. The *metric system of weights and measures* is made compulsory for dispensing, and all pharmaceutical operations involving weighing and measuring.—Abstracted from the *Pharmaceutical Journal and Pharmacist.*

NEW TEXAS ADVERTISING LAW.

Any person, firm, corporation or association, who, with intent to sell or in any wise dispose of merchandise, securities, service, or anything offered by such person, firm, corporation or association, directly or indi-

rectly, to the public for sale or distribution, or with intent to increase the consumption thereof, or to induce the public in any manner to enter into any obligation relating thereto, or to acquire title thereto, or any interest therein, makes, publishes, disseminates, circulates, or places before the public, or causes directly or indirectly to be made, published, disseminated, or placed before the public in this state, in a newspaper, or other publication, or in the form of a book, notice, handbill, poster, bill, circular, pamphlet, or letter, or in any other way, an advertisement of any sort regarding merchandise, as to its character or cost, securities, service, or anything so offered to the public, which advertisement contains any assertion, representation or statement of fact which is untrue, deceptive or misleading in any material particular as to such matters or things so advertised, shall be guilty of a misdemeanor; and upon conviction, shall be fined not less than $10, nor more than $200, for each offense, *provided, however,* that the provisions of this act shall not apply to any owner, publisher, agent or employee of a newspaper or other publication, periodical or circular, who, in good faith, and without knowledge of the falsity of the character of such advertisement, causes to be published, or takes part in the publication of such advertisement.

CALIFORNIA DRUGGISTS OPPOSE LAW RESTRICTING BIOLOGICAL LABORATORY WORK TO GRADUATES IN MEDICINE.

Senate Bill No. 406, introduced into the California legislature by Senator Crowley of San Francisco, is being opposed by the drug trade of the state. Senator Crowley's bill amends the State Medical Practice Act by adding a new section (17-*b*) prohibiting a pharmacist, even though qualified by taking a course either in the pharmacy, medical or any other department of the University of California or other institution of learning in bacteriology or pathology, from opening or conducting a laboratory unless he places in charge a person holding an unrevoked physician's and surgeon's certificate. The section as interpreted prohibits the sale of serums, vaccines, antitoxins, etc., in a drug store, unless under the immediate direction and supervision of a person holding an unrevoked physician's certificate. W. Bruce Philip, secretary of the Retail Druggists' Association of San Francisco and the Alameda County Pharmaceutical Association says "the bill should be amended so that while it would exclude an incompetent person from doing this work, those who are qualified should be permitted to follow their chosen calling."

The section referred to, reads:

"No person other than a person holding an unrevoked physician's and surgeon's certificate as provided by the terms of this act shall conduct, maintain or operate any clinical, diagnostic, pathological, biological or other laboratory in this state for the investigation, diagnosis or treatment of human beings for diseases or the prevention thereof, or for any injuries, deformities or any other physical or mental condition of human beings, or for the preparation, manufacture, standardization, sale or other disposal of any serum, vaccines, antitoxins or other biological products except under the immediate supervision and direction of a person holding an unrevoked physician's and surgeon's certificate as defined by this act."

RULINGS ON THE SALE OF ALCOHOL.

The Philadelphia Drug Exchange has notified its members that Attorney General A. Mitchell Palmer has recently ruled that:

"(1) The authority of the Commissioner of Internal Revenue to issue permits for the sale in wholesale quantities of intoxicating liquor is limited to manufacturers and wholesale druggists.

"(2) The authority of the Commissioner of Internal Revenue to issue permits for the sale in wholesale quantities of industrial alcohol is limited to manufacturers and wholesale druggists if said alcohol is fit for beverage purposes; but not if it is denatured so as to be unfit for such purposes."

Such ruling places the entire burden of distributing alcohol and intoxicating liquor throughout the United States upon manufacturers and wholesale druggists.

As to what constitutes a wholesale druggist, probably the best definition of the term is that proposed by the National Wholesale Druggists' Association. It is as follows:

"A wholesale druggist is a person, firm or corporation which carries a stock of drugs, oils, chemicals, pharmaceuticals, proprietary medicines and druggists' sundries in such assortments and quantities as will enable them to supply regularly from their stock through selling service and credit extension the usual and immediate requirements of retail druggists and pharmacists, hospitals

and dispensaries, and whose volume of business is primarily and principally in such articles."

It is understood, of course, that dealing in one or a few of the lines of articles mentioned in the definition would not constitute a wholesale druggist; the functions and operations of a wholesale druggist certainly embrace all or the great majority of such lines.

BOOK NOTICES AND REVIEWS.

Scientific and Applied Pharmacognosy. By Henry Kraemer, Ph.B., Ph.M., Ph.D., Dean of the College of Pharmacy and Professor of Pharmacognosy in the University of Michigan College of Pharmacy; Member of the Executive Committee of Revision of the United States Pharmacopoeia. Second edition, revised and illustrated with over 300 plates. Octavo, xxviii + 741 pages. New York: John Wiley & Sons, Inc.

Owing to an increase in the size of the printed page, the second edition of this standard reference book is more compact than the previous volume. The use of heavy-faced type for the titles of the different items considered and for subtitles of paragraphs makes for greater convenience and is a decided improvement.

In the introductory chapter the author not only calls attention to the exceedingly broad field of pharmacognosy but lays stress on the qualifications necessary for an intelligent pursuit of this branch of pharmacy as a livelihood. A thorough knowledge of botany, chemistry, physics and crystallography is considered essential. No mention is made of the importance of even superficial training in materia medica and therapeutics in the identification of drug products and the essentials of bacteriology in the microexamination of food products. General principles and definitions regarding natural, commercial and botanical origins, habitat, titles, time of collection, valuation and methods of preparation and preservation are stated in this part of the book.

The body of the text is devoted to a consideration of the various official and non-official drugs and drug products together with brief notations regarding some of the more important foodstuffs. Engler and Prantl's natural arrangement of botanical orders has been followed throughout the work. A summary of the anatomical characters is given in connection with each family. This is followed by detailed descriptions of the individual plants of medicinal or economic importance in that family. The descriptions include details of macroscopic and microscopic structure, constituents, allied plants, possible adulterants and literature regarding the item under consideration. In the last section of the book the topic of powdered drugs is very briefly considered and an analytical key for the identification of many powdered drugs and drug products is included. The official standards for spices set forth in Circular 136 (Standards of Purity for Food Products, U. S. Bureau of Chemistry) are stated in connection with the spice or condimental drugs, but these requirements are not always in conformity with the Pharmacopoeial and Formulary standards and attention should be called to the differences. The designation of official items might possibly increase the usefulness of the volume especially to those who are not entirely familiar with the drugs and products included in the Pharmacopoeia and Formulary.

The volume is a very compact and useful reference book for those possessing a knowledge of botany and vegetable histology and who are familiar with the technical procedures in microscopy. C. W. B.

The Microanalysis of Powdered Vegetable Drugs. By Albert Schneider, M.D., Ph.D. (Columbia University), Professor of Pharmacognosy in the College of Pharmacy and Professor of Pharmacology in the College of Medicine, University of Nebraska, Lincoln. Second edition, with 237 illustrations. 548 pp. P. Blakiston's Son & Co. Price $5.00 net.

The second edition, which has followed many years after the first, presents a very striking enlargement over the first edition.

Schneider's work is thorough, comprehensive and strictly up to date, and perhaps is the best so far presented in American literature. The introductory chapters embracing "The Microscope in Modern Pharmacy;" "General Suggestions on the Examination of Vegetable Powders;" "The Quality and Purity of Vegetable Drugs from the Standpoint of the Pure Drugs Act;" "Causes Modifying the Characteristics of Vegetable Powders;" Powdering Vegetable Drugs;" "Adulteration or Sophistication of Vegetable Drugs;" "The Microscopical Examination of Powdered

Vegetable Drugs" are very readable and useful. The "keys" are comprehensive and appear to be very carefully prepared. The chapter on "Quantitative Microscopic Determination" is entirely new. Two hundred powders are figured, and the figures described. The figures are mostly in simple pen lines, but very clear and valuable in actual practice.

The book is of special value to the practical microscopist who meets with powdered vegetable drugs, and is a reference book that should be in every pharmaceutical library, but it is too comprehensive for any of the subjects offered in the two-year pharmaceutical course. Perhaps it could be used as a textbook in a four-year pharmaceutical course.

E. N. GATHERCOAL.

Pharmaceutical Bacteriology. By Albert Schneider, M.D., Ph.D., Professor of Pharmacognosy, College of Pharmacy, University of Nebraska, Lincoln. Second edition revised and enlarged with 97 illustrations. 441 pages. P. Blakiston's Son & Co. Price $4.00.

The second edition of Schneider's Pharmaceutical Bacteriology is a decided enlargement of the first edition and also presents some improvements. The work is very comprehensive. Some of the rather glaring faults of the first edition have not been corrected; notably, the erratic arrangement of the chapters. As this work represents the only textbook so far published especially designed for bacteriology courses in the pharmacy curriculum, it is unfortunate that it is not more suitably arranged for such courses. If it is to be used as a textbook, a laboratory guide must also be supplied; for the chapter on bacteriological technic, placed near the center of the book, is not at all suitable as a laboratory guide for students beginning in bacteriology.

The preliminary chapters on history, origin of bacteria and other microörganisms, general morphology and physiology, are very extensive and well written, but contain a very large amount of material that cannot really be used in short pharmaceutical bacteriological courses. When one considers, too, that at least 100 pages are devoted to such subjects as: Symbiology, Zymology, Yeasts and Molds, and Adenology, one realizes what a vast amount of material, even though it be good material, is presented on topics that must be of inferior rank in pharmaceutical bacteriology. The chapters on immunology, serology, disinfection and communicable diseases are extensive, complete and modern. Perhaps in a pharmaceutical bacteriological course of three or more semesters the work would be suitable as a textbook.

E. N. GATHERCOAL.

Pharmaceutical Botany. A Textbook for Students of Pharmacy and Science. By Heber W. Youngken, A.M., M.S., Ph.M., Ph.D., Professor of Botany and Pharmacognosy and Director of the Microscopical Laboratories in the Philadelphia College of Pharmacy. Third edition, revised and enlarged, with 238 illustrations and glossary of botanical terms. 479 pp. P. Blakiston's Son & Co. Price $3.75 net.

The third edition of Professor Youngken's Pharmaceutical Botany follows the general lines of the second edition, with some notable enlargements and improvements. As has been stated in the review of the second edition, the text is especially designed for use in the botanical department of pharmaceutical courses.

The plan of the text is decidedly different from the usual textbook of botany, but includes sufficient morphology, histology, and taxonomy to prepare the student well for the study of pharmacognosy.

The illustrations in the text are excellent, though it is to be noted that the common practice is followed of "borrowing" many illustrations. E. N. GATHERCOAL.

French-English Medical Dictionary. By Alfred Gordon, A.M., M.D. (Paris), Late Associate in Nervous and Mental Diseases, Jefferson Medical College; Fellow of the American College of Physicians; corresponding member of the Société Medico-Psychologique de Paris, France, etc. Published by P. Blakiston's Son & Co., Philadelphia. 164 pp. Price $3.50 net.

The dictionary has been prepared by one who has been in touch with French medicine, and, therefore, the terms and definitions given conform to their application. Each French word is accompanied by a combination of letters in English, giving the pronunciation as accurately as possible, and there is also a separate key to pronunciation. The dictionary seems to be quite complete and,

certainly, will be useful for those who desire, or find it necessary to read and study French medicine. While primarily compiled as a medical dictionary, many of the terms apply to pharmacy and chemistry.

PUBLICATIONS RECEIVED.

Reprints of Published Papers of the Wellcome Chemical Research Laboratories embodying the results of investigations carried out in the Laboratories. These are numbered 176 to 185, the subjects dealt with being: 'Examination of the Bark of *Croton Gubouga*," by J. A. Goodson and H. B. W. Clewer; "Substituted Phenylarsinic Acids and Their Reduction Products," by R. G. Fargher; "The Abnormal Behaviour of Glyoxalinecarboxylic Esters and Anilides towards Diazonium Salts," by R. G. Fargher and F. L. Pyman; "The Stereo-chemistry of Hyoscine," by H. King; "1: 3-Benzodiazolearsinic Acids and Their Reduction Products," by R. R. Baxter and R. G. Fargher; "Constituents of the Leaves of *Helinus Ovatus*," by J. A. Goodson; "The Composition of Salvarsan," by R. G. Fargher and F. L. Pyman; "Orientation of the Nitro- and Arylazo-Glyoxalines Fission of the Glyoxalone Nucleus," by R. G. Fargher; "Arsinic Acids Derived from Guaiacol and Veratrole," by R. G. Fargher; "Ortho-Para-Isomerism in the Preparation of Diaminodiphenylmethane," by H. King.

NEW PUBLICATIONS.

Organic Chemistry: A Laboratory Course of Organic Chemistry, Including Qualitative Organic Analysis. By A. W. Titherley. 263 pp. Illustrated. New York: D. Van Nostrand Co. Price, $2.50.

Organic Medicinal Chemicals. By M. Barrowcliff and Francis H. Carr. (Industrial Chemical Series.) London: Bailliere Tindall & Cox. Price, 15s, net.

Plant Chemistry: The Chemistry of Plant Life. By Roscoe W. Thatcher. 268 pp. New York: McGraw-Hill Book Co., Price, $3.00.

Plant Chemistry: An Introduction to the Chemistry of Plant Products. Vol. I. On the Nature and Significance of the Commoner Organic Compounds of Plants. By Paul Haas and T. G. Hill. 3rd edition. 414 pp. New York: Longmans, Green & Co. Price, $5.50.

Applied Colloid Chemistry: General Theory. By Wilder D. Bancroft. 345 pp. Illustrated. New York: McGraw-Hill Book Co., Inc. Price, $3.00.

Chemical Laboratory: How to Make and Use a Small Chemical Laboratory. By R. F. Yates. 102 pp. Illustrated. New York: D. Van Nostrand Co. Price, $0.75.

An Introduction to Bacterial Diseases of Plants. By Erwin F. Smith, in charge of Laboratory of Plant Pathology, Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C. 688 pp. with 453 illustrations. Philadelphia: W. B. Saunders Co., 1920. Price, cloth, $10.00 net.

The Microscope. By Dimon Henry Gage. Thirteenth edition. Ithaca, N. Y.: The Comstock Publishing Co.

Volumetric Analysis for Students of Pharmaceutical and General Chemistry. By Charles H. Hampshire, B.Sc. (Lond.), F.I.C. Third edition. 124 pp. London: J. and A. Churchill, 1921. Price, 7s. 6d., net.

The Raw Materials of Perfumery: Their Nature, Occurrence, and Employment. By Ernest J. Parry, B.Sc., F.I.C., F.C.S. ix + 112 pp. London: Sir Isaac Pitman and Sons, Ltd. Price, 3s., net.

The Analysts' Laboratory Companion. By Alfred E. Johnson, B.Sc. (Lond.), F.I.C., A.R.C.Sc.I. Fifth edition. ix + 176 pp. London: J. and A. Churchill, 1920. Price, 10s. 5d., net.

Quantitative Analyse durch Elektrolyse. By Alexander Classen. Sixth edition, revised and enlarged. 346 pp. M. 26. Berlin: Julius Springer. For review see *Oesterr. Chem.-Ztg.*, 23, 138, 1920.

Einführung in die analytische Chemie. Part I. Theorie und Gang der Analyse. 94 pp. *Part II. Die Reaktionen.* By F. Küsberg. 105 pp. M. 5.60. Berlin: B. G. Teubner. Price of each vol. M. 5.60. For review see *Tonind.-Ztg.*, 44, 1099, 1920.

Erläuterungen zum Gebrauch organischer Reagenzien in der anorganischen Analyse. By M. Müller. Ein Hilfsbuch für d. chem. Praktikum. Berlin: Walter de Gruyter & Co. M. 10.

Guida pratica all'analisi chimica qualitativa inorganica. By G. Ortoleva. Milan: Libreria Editice Giuseppe Tamburini. Piazza Mentana N 3. L. 8.50. For review see *Boll. chim. farm.*, 59, 517, 1920.

A Dictionary of Scientific Terms: Pronunciation, Derivation, and Definition of Terms in Biology, Botany, Zoology, Anatomy, Cytology, Embryology, Physiology. By I. F. and W. D. Henderson. Edinburgh and London: Oliver and Boyd. 354 pp. 18s. net. For review see *Nature*, 106, 498, 1920.

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